MhouseKit WS2^{S}

For power-operated swing gate

CE

Installation instructions and warnings, and User Manual

mhouse

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GENERAL SAFETY WARNINGS AND PRECAUTIONS

— STEP 1 —

Safety warnings

- **CAUTION! – This manual contains important instructions and warnings for personal safety.** Incorrect installation could cause serious physical injury. Carefully read all parts of this manual before starting any work. If in doubt, suspend installation immediately and contact the Mhouse Technical Assistance.
- **CAUTION! – Important instructions: keep this manual in a safe place to enable future product maintenance and disposal procedures.**
- **CAUTION! – According to the most recent European legislation, the production of a power-operated door or gate must comply with the standards envisaged in the Directive 2006/42/EC (Machinery Directive) and in particular standards EN 12445; EN 12453; EN 12635 and EN 13241-1, which enable declaration of presumed conformity of the automation. In consideration of this, all mains connection, testing, commissioning and maintenance operations must be performed exclusively by a qualified and skilled technician.**
  All preliminary set-up, installation and programming operations may be performed by personnel with standard skills, provided that all instructions and the relative sequences in this manual are strictly observed, with particular reference to the warnings in this STEP 1.

Installation warnings

While reading this manual, take care to observe all instructions marked with the following symbol:

These symbols indicate subjects that may be the source of potential hazards and therefore the prescribed operations must be performed exclusively by qualified and skilled personnel, in observance of these instructions current safety standards.

- Before installation, ensure that this product is suitable for automation of your gate or door (see STEP 3 and chapter "Product Technical Specifications"). If not suitable, do NOT proceed with installation.
- On the system power mains install a device for disconnection (not supplied), to guarantee a gap between contacts and complete disconnection in the conditions of overvoltage category III.
- **All installation and maintenance operations must be performed with the automation disconnected from the power supply.** If the power disconnect device is not visible from the location of the automation, before work a notice should be affixed on the disconnect device, with the text "CAUTION! MAINTENANCE IN PROGRESS".
- **CAUTION! - Never power up the motor before fully installed on the column and leaf of the gate.**
- During installation, handle the automation with care, avoiding the risk of impact, dropping or contact with any type of liquid. Never place the product near to sources of heat and never expose to naked flames. This may damage product components and cause malfunctions, fire or hazardous situations. If this occurs, suspend installation immediately and contact the MhouseTechnical Assistance.
- Never make modifications to any part of the product. Operations other than as specified can only cause malfunctions. The manufacturer declines all liability for damage caused by makeshift modifications to the product.
- If the power cable is damaged, it must be replaced exclusively by a qualified technician, to avoid potential risks.
- Connect the control unit to an electric power line equipped with an earthing system.
- This product is not designed to be used by persons (including children) whose physical, sensorial or mental capacities are reduced, or with lack of experience or skill, unless suitable instructions regarding use of the product have been provided by a person responsible for safety.
- The key-operated selector switch must be positioned in sight of the automation, but far from moving parts and at a height of at least 1.5 m from the ground, not accessible by the public. If this is used in "hold-to-run" mode, ensure that there are no persons in the vicinity of the automation.
- In the vicinity of the automation children must be supervised to ensure that they do not play with it.
- Ensure that there are not points of entrapment or crushing with fixed parts when the gate leaf is in the maximum opening or closing position; protect parts if necessary.
- The product may not be considered an efficient system of protection against intrusion. If an efficient protection system is required, the automation must be integrated with other safety devices.
- The automation must not be used before performing the commissioning procedure as specified in the chapter "Testing and commissioning".
- Check the automation frequently to ensure there is no imbalance, signs of wear or damage to electrical or mechanical parts. Do not use the automation if adjustments or repairs are necessary.
- In the event of long periods of disuse, to avoid the risk of leaks of harmful substances from the optional battery (PR1) disconnect it from the automation and store in a dry location.
- Do not allow children to play with fixed control devices. Keep remote control devices out of reach of children.
- The product's packaging materials must be disposed of in full compliance with local regulations.

Operation warnings

- For cleaning the product surfaces, use a soft damp cloth. Use water only; never use detergents or solvents for cleaning.

KNOWLEDGE OF THE PRODUCT AND PREPARATION FOR INSTALLATION

NOTES TO MANUAL

- **This manual describes how to set up a complete and optimal automation, such as that shown in fig. 1, using all Mhouse devices that are part of the automation system named "WS2S". Some of these devices are optional and may not be present in the kit. For a complete overview of the devices, refer to the MHouse product catalogue.**
- **This manual has been drawn up as a step-by-step guide. Therefore, to ensure safe and facilitated assembly and programming procedures, perform all operations described in the same order as specified in this document.**

— STEP 2 —

2.1 - PRODUCT DESCRIPTION AND INTENDED USE

The devices in this kit, plus other accessories (some optional and not included in the pack), form the automation system named "WS2S", designed for the automation of a "residential" swing gate. **Any other use than as specified herein or in environmental conditions other than as stated in this manual is to be considered improper and is strictly prohibited!**

The main part of the automation comprises an electromechanical gearmotor, fitted with a 24 V dc motor with helical teeth gear; it is fitted with a mechanical key release which enables manual movement of the gate in the event of a power failure. The gearmotor is equipped with a control unit that manages operation of the entire automation. The control unit comprises a board and incorporated radio receiver which receives the com-

mands sent by the user via a transmitter. It can memorise up to 256 GTX4 transmitters (if memorised in "Mode I") and up to 6 pairs of PH100 photocells.
Connection of the control unit with the various devices is by means of a single 2-wire cable ("ECSbus" system). The control unit can also be mains-powered (230 V) or alternatively by the Mhouse PF photovoltaic system.
If powered from the mains, it can house a buffer battery (model PR1, optional accessory), which ensures that the automation can perform a number of manoeuvres for several hours in the event of a power failure. During the power failure, or at any other time, the gate leaf can be moved manually if required, by first releasing the gearmotor using the relative key (see chapter 11.3 - User's Guide).

2.2 - COMPONENTS USED TO SET UP A COMPLETE SYSTEM

Fig. 2 illustrates all components used to set up a complete system, such as that shown in **fig. 1**.The components are:
A - 2 electromechanical gearmotors WS1SK with fixing brackets
B - 2 fixing plates
C - 3 release keys
D - 1 pair of PH100 photocells (one TX and one RX)
E - 2 protection caps
F - 2 GTX4 radio transmitters
G - 1 FL100 flashing light with integrated aerial
H - Fixing brackets and curved anti-shear arms: the screws required for fixing the slotted arms are not supplied, as they depend on the material and thickness of the leaf.
I - 2 limit switch stops (they are not supplied in the pack and are not part of the Mhouse product range).
L - Metal hardware

***Note** - Some devices and accessories specified in the manual are optional and may not be present in the kit. .For a complete description, refer to the Mhouse product catalogue or visit the website www.mhouse.com.*

— STEP 3 —

3.1 - CHECKING SUITABILITY OF GATE TO BE AUTOMATED AND RELATIVE ENVIRONMENT

- Ensure that the mechanical structure of the gate complies with current national standards and that it is suitable for automation. For this check, refer to the information specified on the gate dataplate. **Important -** This product cannot be used to automate a gate that is not already efficient and safe; furthermore it cannot solve defects caused by incorrect gate installation or poor maintenance.
- Manually move the gate in both directions (opening/closing) and ensure that friction is constant throughout travel (there must be no points of increased or decreased force).
- If the leaf is fitted in a pedestrian pass door or a door onto the leaf movement area, ensure that this door does not obstruct normal travel, and install a suitable interlock device if necessary.
- Manually move the gate to any position; leave it stationary and ensure that it does not move when left.
- Ensure that the space around the site of gearmotor installation enables safe and easy manual gate release.
- Ensure that the selected surfaces for installation of the various devices are solid and guarantee a stable fixture; as regards photocells, select a flat surface that guarantees correct alignment between photocells (Tx and Rx).
- Ensure that all devices to be installed are in a sheltered location and protected against the risk of accidental impact.

3.2 - PRODUCT APPLICATION LIMIT

Before proceeding with installation, perform the following checks in the specified sequence and ensure conformity both with the data in this paragraph and the technical data provided in the chapter "Technical Specifications".

1 - Ensure that the dimensions and weight of the gate are within the following limits of use:
WS2S - maximum length 2.2 m
- maximum weight 200 kg.
- opening angle 110°
On the basis of the leaf opening angle (**fig.6**), that it is possible to observe the values specified in the graph of **fig. 4**;
On the basis of value "**B**", and the leaf opening angle in the table, value "**A**" can be calculated. For example: if B is equal to 100 mm and an opening of 100° is required, A must be approximately 180 mm.

2 - Check the overall dimensions of the gearmotor (**fig. 3**). *Note – These measurements also serve as a reference to calculate the space occupied by the foundation pit for routing the electrical cable ducting.*
3 - Ensure that the estimated lifetime is compatible with the intended use (see paragraph 3.3).
4 - Ensure that all limits, conditions and warnings in this manual can be observed.

3.3 - PRODUCT DURABILITY

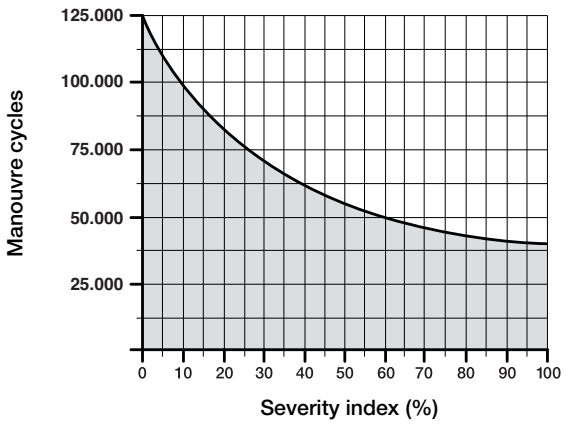
The lifetime is the average economic duration of the product. The value of lifetime is strongly influenced by the intensity of the manoeuvres, i.e. the sum of all factors that contribute to product wear, see Table 1. To estimate the durability of your automation, proceed as follows:
01. Add up all the values in the items of **Table 1**;
02. In **Graph 1** from the value obtained above, trace vertical line until it intersects the curve; from this point trace a horizontal line until it intersects the line of the "manoeuvre cycles". The value obtained is the estimated lifetime of your product.

The lifetime values specified in the graph are only obtainable if the maintenance schedule is strictly observed (see chapter 9 - Maintenance schedule). The estimation of lifetime is made on the basis of design calculations and the results of tests performed on prototypes. As it is only an estimation, it does not represent any form of guarantee on the effective lifetime of the product.

TABLE 1

		Severity index
Leaf length	**1 - 1,5 m** **1,5 - 2,2 m**	**10%** **25%**
Leaf weight	**> 100 kg** **> 150 kg**	**10%** **25%**
Ambient temperature over 40°C or lower than 0°C or humidity greater than 80%		**20%**
Solid leaf		**15%**
Installation in windy zone		**15%**

GRAPH 1



Example of durability calculation: automation of a gate with a leaf length of 1.8 m with weight of 120 kg, for example, in a location subject to strong winds. Table 1 states the "severity index" values for this type of installation: 25 % ("Leaf length"), 10% ("Leaf weight") and 15% ("Installation in windy zone").
These values must be added up to obtain the overall severity index, which in this case is 50%. With the value obtained (50%), check the horizontal axis of Graph 1 ("severity index"), for the corresponding value of "manoeuvre cycles" which our product can complete in its lifetime = approx. 55,000 cycles.

— STEP 4 —

4.1 - PRELIMINARY CHECKS FOR INSTALLATION

4.1.1 - Establish the position of devices in the system

With reference to **fig. 1** and **5**, locate the approximate position for installation of each device envisaged in the system. **Fig. 1** shows a system made using this product and other optional accessories in the Mhouse range. These elements are positioned according to a typical standard layout. The components are:

[**a**] - 1 CL2S control unit.
[**b**] - 1 FL100 flashing light with integrated aerial
[**c**] - 1 pair of PH100 photocells (one TX and one RX)
[**d**] - 1 KS100 key-operated selector switch
[**e**] - 2 photocell posts
[**f**] - 2 limit switch stops
[**g**] - 2 electromechanical gearmotors WS1SK

WARNING! - Some of these devices are optional and may not be present in the kit (see Mhouse product catalogue).

Warnings:
- *The gearmotor must be anchored to the ground, laterally to the gate using the relative fixing plate.*
- *The fixed control devices must be positioned:*
  - in sight of the automation;
  - far from moving parts;
  - at a height of at least 1.5 m from the ground;
  - not accessible by the public.

4.1.2 - Establish the position of all connection cables

Refer to the instructions in paragraph 4.2 to establish the layout of the raceways for electric cable ducting.

4.1.3 - Ensure all equipment and materials for work are available

Before starting work, ensure that you have all equipment and materials required to complete the work. Ensure that all items are in good condition and comply with local safety standards.

4.1.4 - Completing the set-up work

Prepare the area for subsequent installation of the devices, completing all preliminary work, such as:
- digging of raceways for protection ducting of electric cables (external ducting may be used as an alternative);
- laying of protection ducting and embedding in concrete;
- sizing of all electric cables to required length (see paragraph 4.2) and routing in protection ducting. **Caution! - In this phase, do not make any electrical connections.**

Warnings:
- *The hoses and ducting serve to protect electrical cables and prevent accidental damage in the event of impact.*
- *When laying pipelines, take into account the risk of possible deposits of water in the branch wells, where condensate may form in the pipelines and the control unit with possible damage to the electronic circuits.*
- *Position the ends of the ducting at the points envisaged for fixture of the various components.*

4.2 - PREPARING ELECTRIC CABLES

To prepare all connection cables, proceed as follows:

a) - Refer to **fig. 5** to check the connections of the various devices to the control unit and terminals to be used for each connection. **Important -** Only devices using "ECSbus" technology can be connected to the terminal "ECSbus"**.**

b) - Refer to **fig. 1** to check positions of the electrical cables in the area. Then draw a similar diagram on paper, adapting it to specific requirements of your system. ***Note*** *- This diagram will be useful to establish the route of the raceways for cable ducting, and to draw up a complete list of the cables required.*

c) - Read **Table 2** to determine the type of cables to be used; then refer to the diagram drawn above and on-site measurements to determine the length of each cable. **Caution! - No cable must exceed the specific maximum length stated in Table 2.**

WARNING - "ECSbus" technology enables the interconnection of devices using a single "bus" cable, with 2 internal electrical wires. Connection of several devices can be in the configuration "**cascade**", "**star**" or the latter two "**combined**":

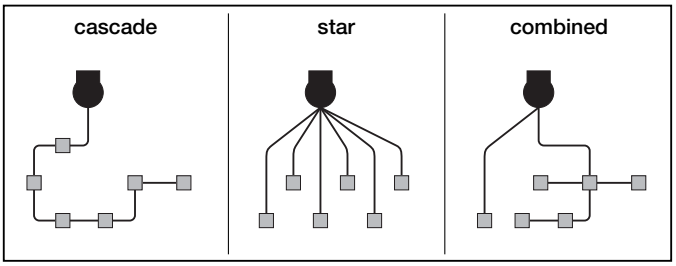


TABLE 2 – Technical specifications of electric cables

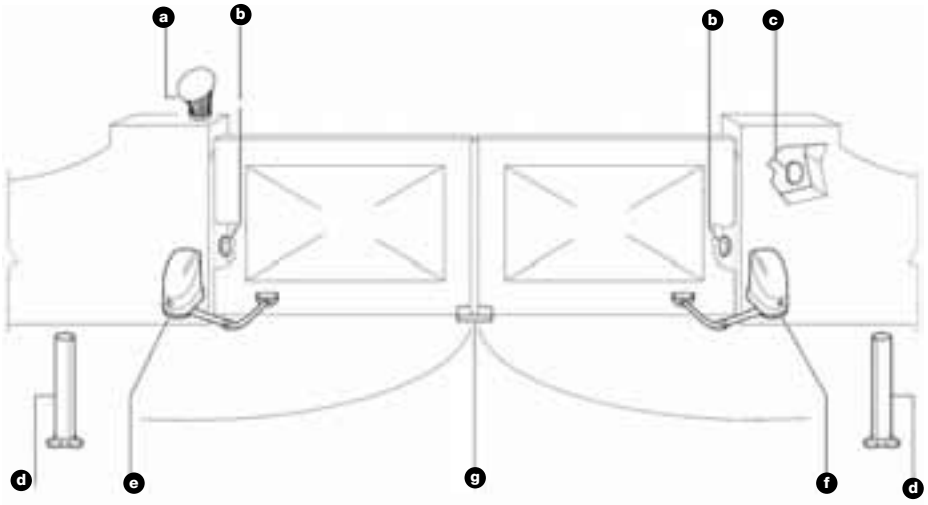
Connection	Type of cable (minimum section values)	Max. admissible length
A - Power line	cable 3 x 1.5 mm²	30 m (*note 1*)
B - FLASH flashing light output	cable 2 x 0.5 mm²	20 m
C - Radio aerial	RG58 shielded cable type	20 m (less than 5 m recommended)
D - input/output ECSbus	cable 2 x 0.5 mm²	20 m (*note 2*)
E - STOP input	cable 2 x 0.5 mm²	20 m (*note 2*)
F - OPEN input	cable 2 x 0.5 mm²	20 m (*note 2*)
G - Motor output M1 and M2	cable 3 x 1 mm²	10 m

Note 1 *- If the power cable is longer than 30 m, a cable with a larger section is required (e.g. 3x2.5 mm²) and safety earthing is necessary in the vicinity of the automation.*

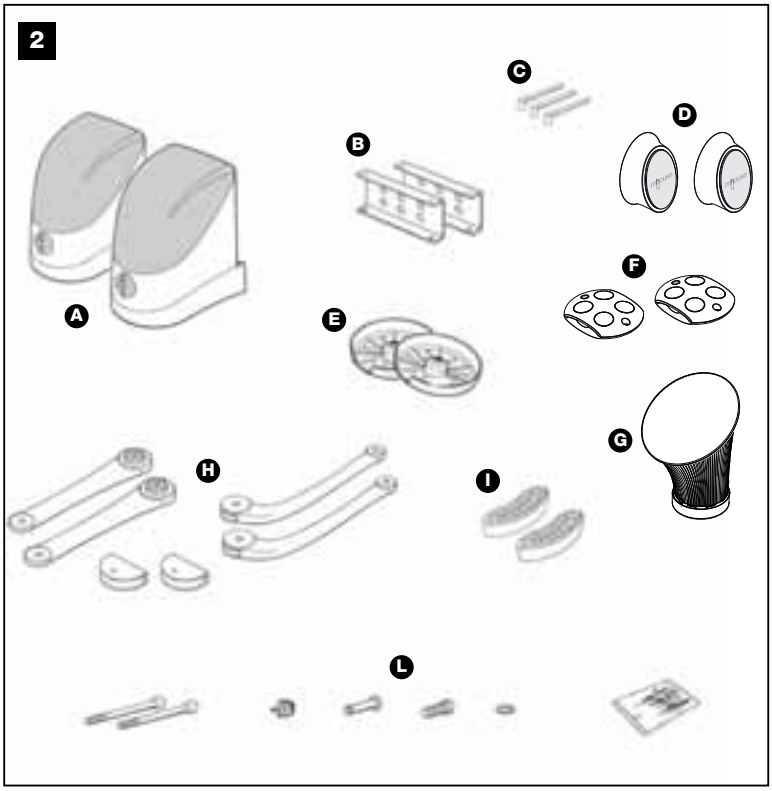
Note 2 *- For cables of ECSbus and those of the STOP and OPEN inputs, a single cable with multiple internal wires may be used, to combine several connections: for example, the STOP and OPEN inputs can be connected to the KS100 selector switch with a cable of 4 x 0.5 mm².*

CAUTION! – The cables used must be suited to the installation environment.; for example a cable type H03VV-F is recommended for indoor environments, and a cable type H07RN-F for outdoor environments is recommended.

1


a
b
b
c
d
e
g
f
d

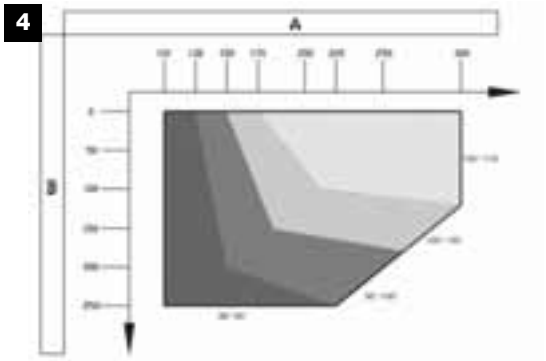
2


C
D
B
F
A
E
G
H
I
L

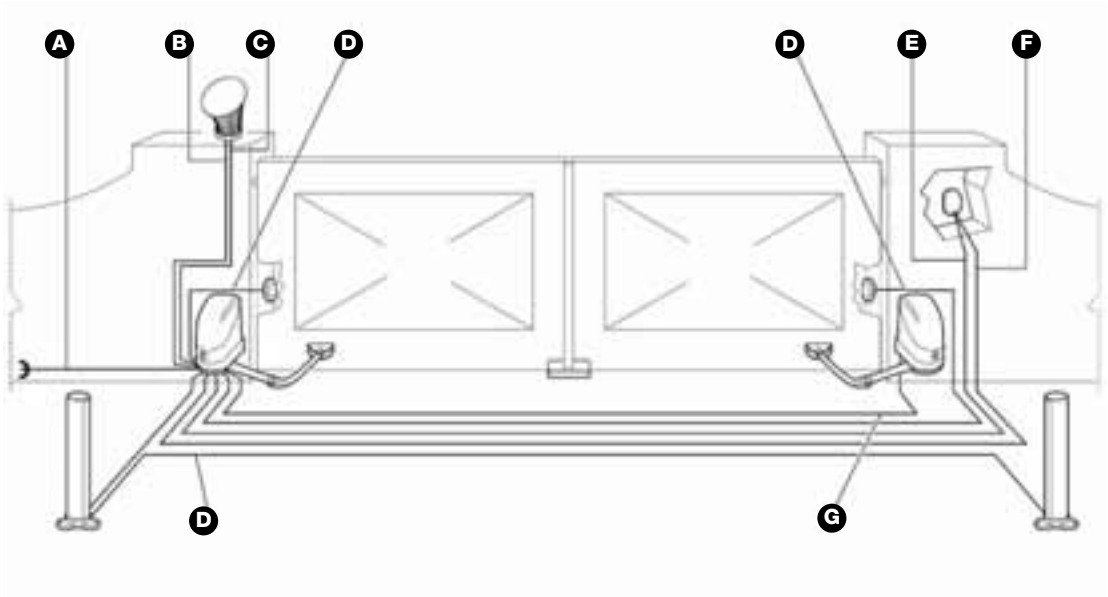
3

237mm
260mm
146mm
540mm

4


A
B

5


A
B
C
D
D
E
F
D
G

INSTALLATION: ASSEMBLY AND CONNECTION OF COMPONENTS

— STEP 5 —

IMPORTANT!

- The following assembly phases show installation of a gearmotor model WS1SK/WS1SC.

- To ensure correct system operation, mechanical stops must be mounted on the floor or wall at the maximum leaf opening and closing points. ***Note*** *- These stops are not supplied in the pack and are not part of the Mhouse product range.*

WARNINGS

• Incorrect installation may cause serious physical injury to those working on or using the system.

• Before starting automation assembly, make the preliminary checks as described in STEP 3.

5.1 - INSTALLING THE GEARMOTOR WS1SC

01. Ensure that the fixing surface is perfectly smooth, level and sufficiently compact. WS2S is not supplied with fixing devices, which must be chosen also on the basis of the fixing surface material.

02. Prepare one or more duct tubes for routing the electric cables (**fig. 6**);

03. With reference to value "B" obtained from table 6, place the gearmotor fixing plate no the fixing surface in the envisaged position, checking that at the positions in **fig. 7- 8**, at the point where the arm fixing bracket is to be positioned, that there is a suitable surface;

04. Trace the drilling points using the plate as a reference, and drill the surface to insert the 4 plugs of at least 8 mm (not supplied) Fix the plate using suitable screws **[A]** and washers **[B] fig. 9**;

05. Ensure that the plate is perfectly level **fig. 10**. Otherwise an offset arm could cause malfunctions of the automation **fig. 11**;

06. Prepare the gearmotor, inserting washer **[D]** in arm **[C]**, then tighten fixing screw **[E]**. Take care to place the arm towards the front section **fig. 12**;

07. Fix the gearmotor to the plate by means of the screws **[F]** and lock nuts **[G] fig. 13**;

08. Using the pins supplied **[H]** and relative safety rings **[I]** fix the curved arm to the straight arm and leaf connecting bracket to the curved arm **fig. 14**;

09. Turn the leaf to the "gate closed" position;

10. Manually release the gearmotor (see paragraph 11.3 – User's guide) and secure the leaf connecting bracket to the gate at the point furthest from the column, extending the arms to the maximum limit (**Fig.11**);

11. Fix the bracket using screws suited to the leaf material;

12. Turn the leaf to the required "gate open" position. Place the limit switch against the straight arm **[L]** and tighten the two screws **[M]** fully down **fig. 15**;

13. Loosen screw **[N]** securing the straight arm to the gearmotor and insert the protection cover **[P]** between the straight arm and washer **[O]**. Refit the previously removed screw and tighten it fully down **fig. 16**;

14. Manually complete a number of leaf opening and closing cycles to ensure that the rack slides smoothly along the pinion throughout the entire length;

15. Manually unlock the gearmotor (see paragraph 11.3 - User's guide);

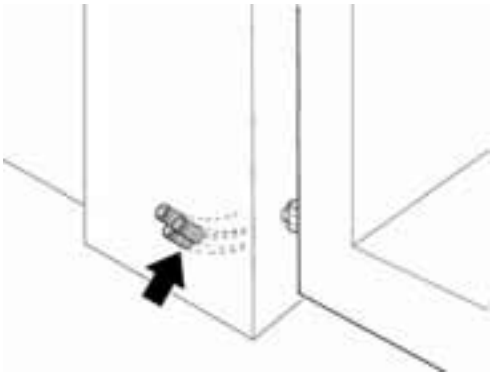
16. Remove the top cover of the gearmotor and using a screwdriver push the closure hook inside the release ring nut and pull the cover upwards **fig. 17**;

17. Before closing the gearmotor cover, make the electrical connections. Refer to **fig. 18**, in paragraph 5.2 and Step 6 (electrical connection of accessories) 6.

18. To install gearmotor WS1SK, repeat the entire procedure described in this paragraph (5.1)

Make electrical connections. Refer to **figure 18** and step 6.

6



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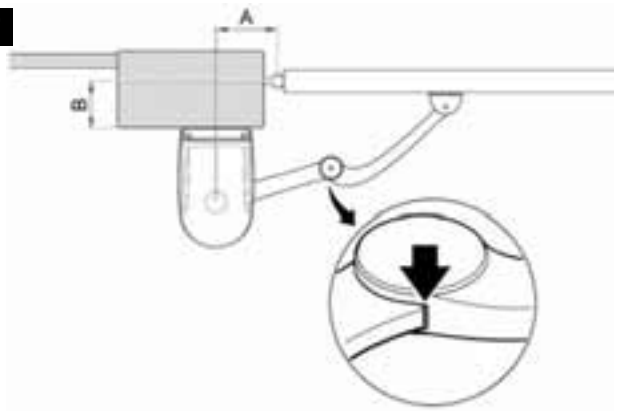

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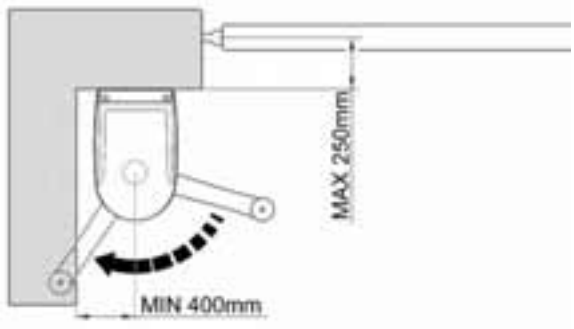

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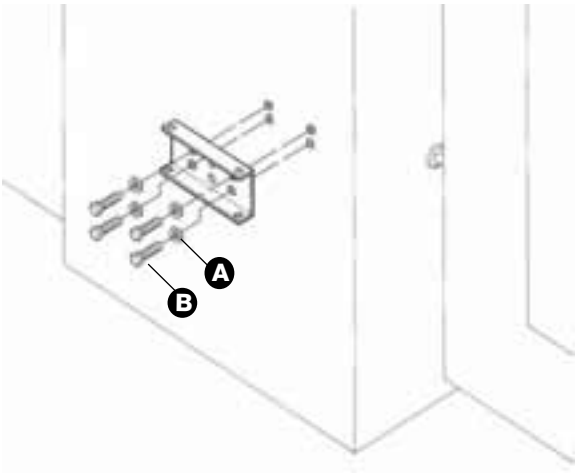

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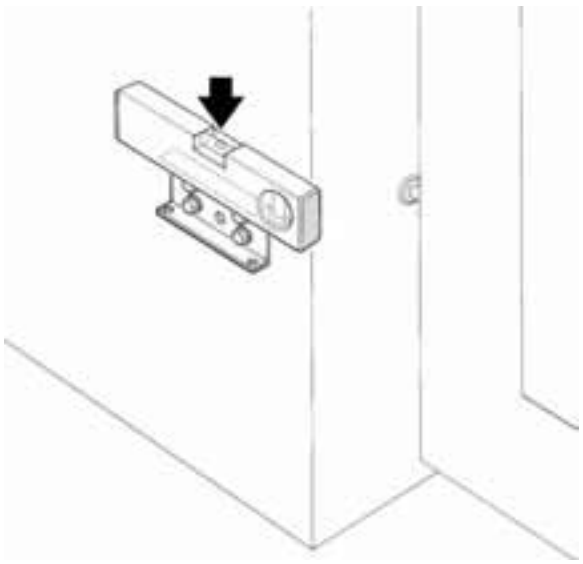

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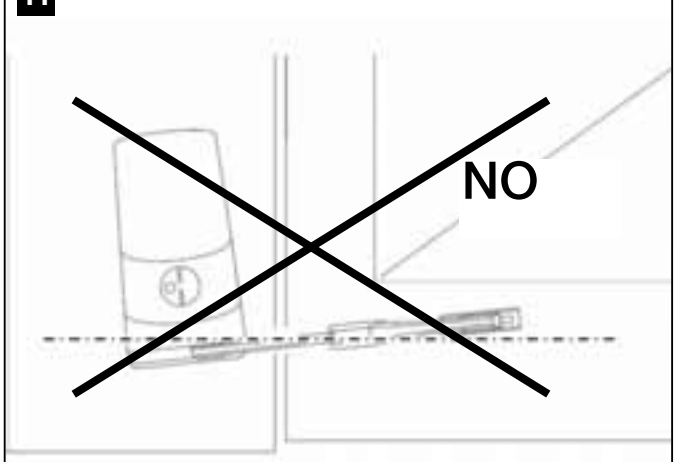

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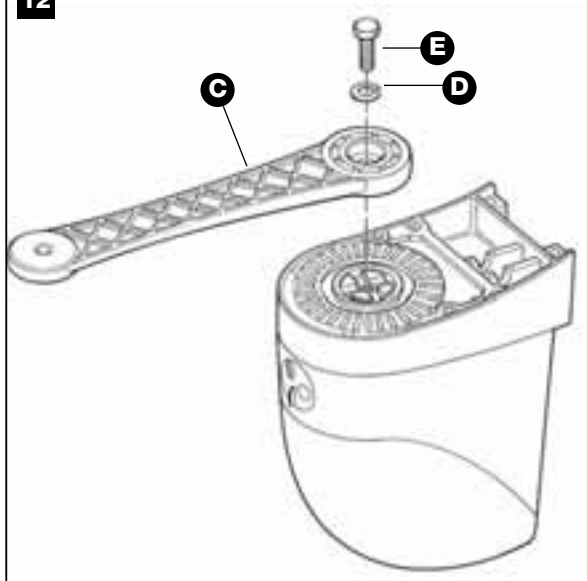

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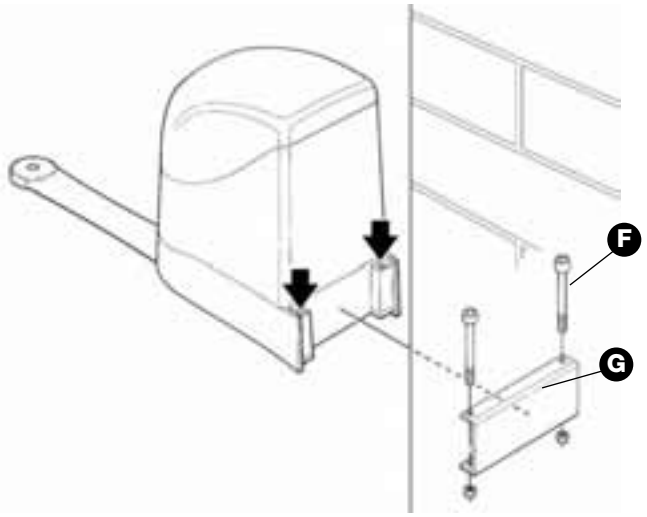

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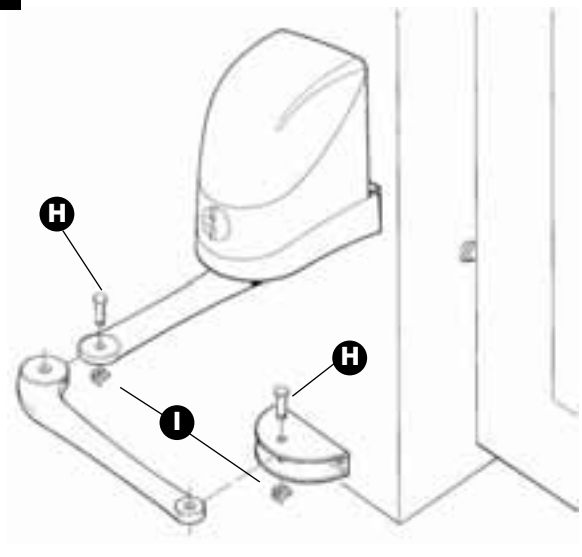

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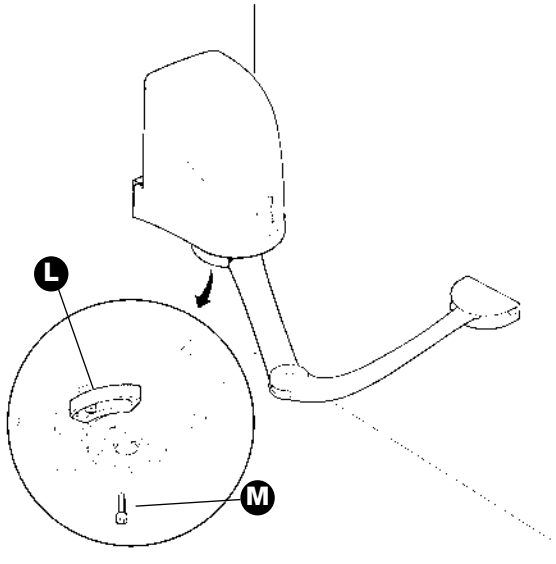

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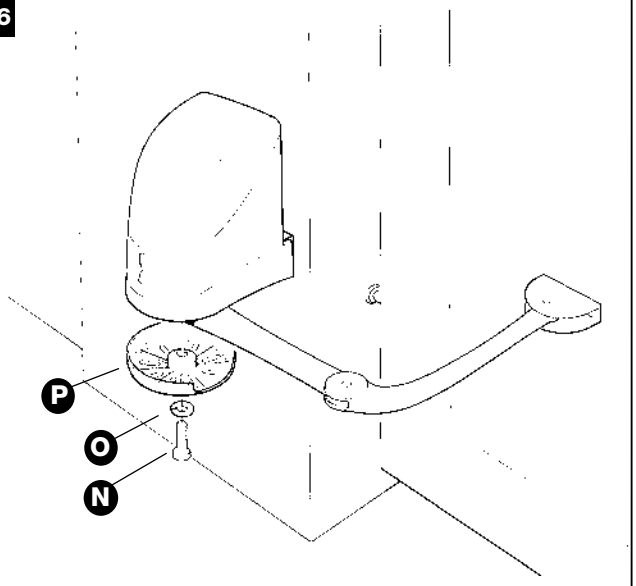
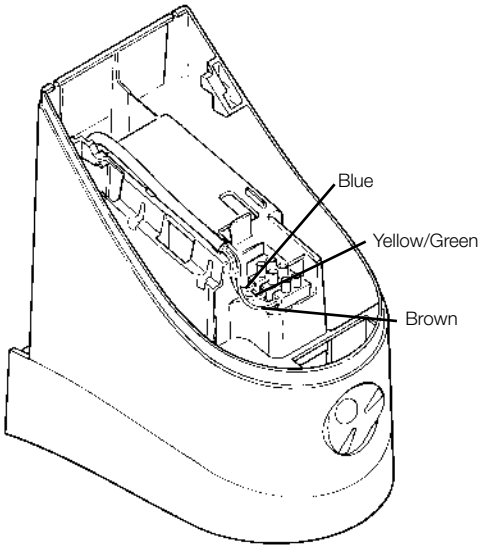
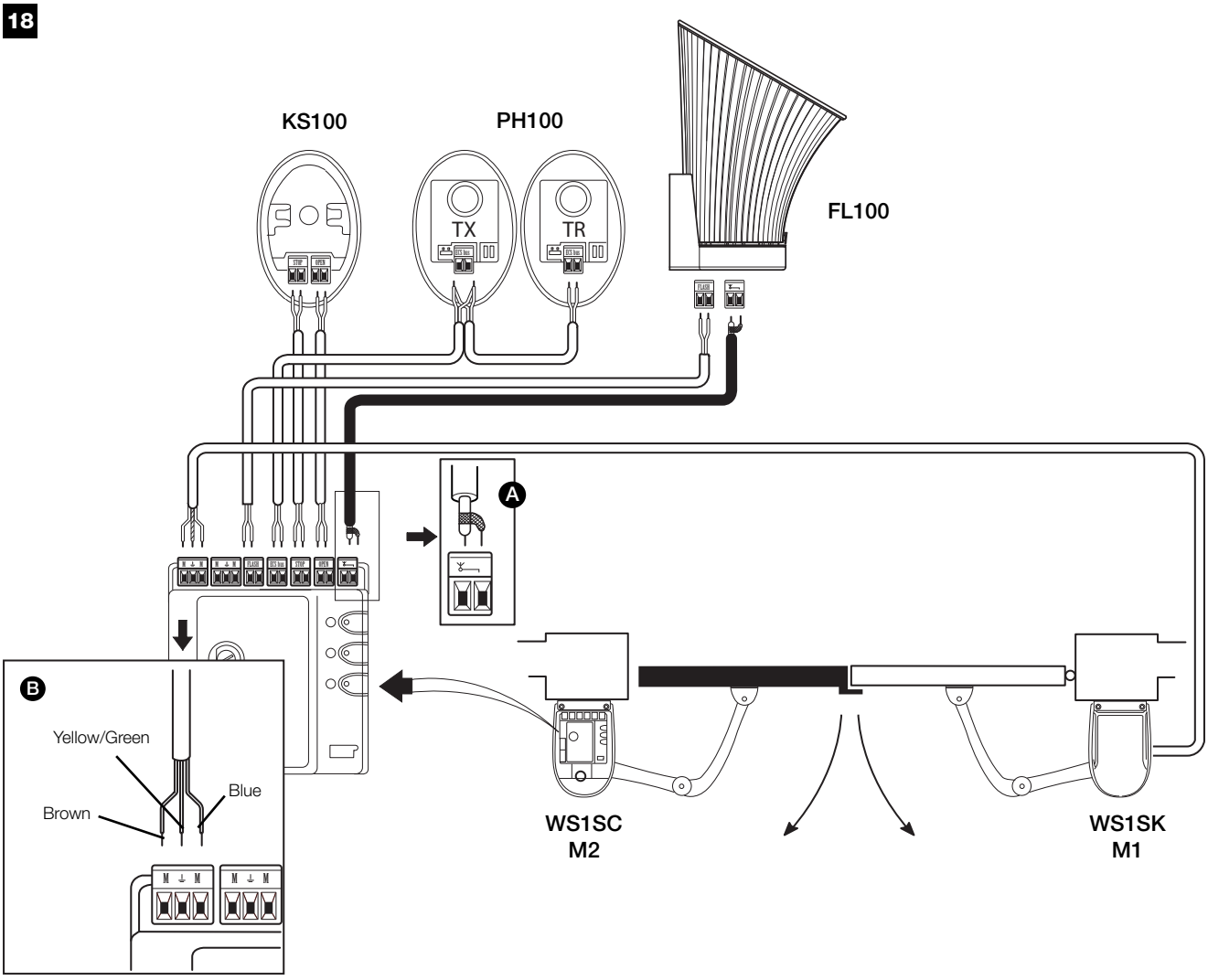

P
O
N

17


Blue
Yellow/Green
Brown

18


KS100
PH100
TX
TR
FL100
A
B
Yellow/Green
Blue
Brown
WS1SC
M2
WS1SK
M1

— STEP 6 —

6.1 - INSTALLING AND CONNECTING PH100 PHOTOCELLS (fig. 19)

Warning: all installation operations must be performed with the system disconnected from the power supply; if fitted, the PR1 backup battery must also be disconnected.

Warnings: Take care not to damage the o-ring fitted (**fig. 19-3**) **[A]**.

Select the position of the two elements making up the photocell (TX and RX) observing the following:

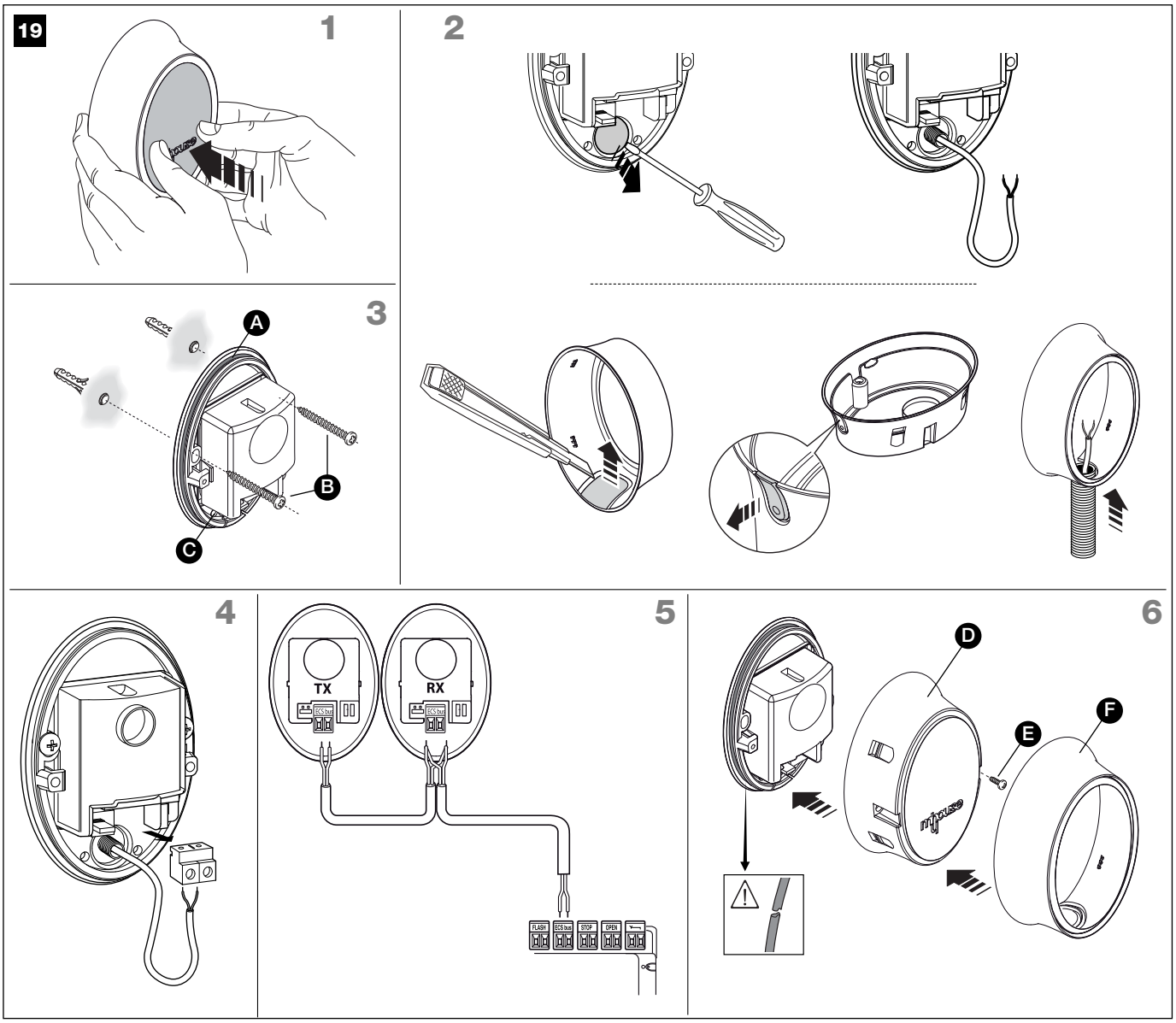
- Place them at a height of 40-60 cm from the ground, to the sides of the zone to be protected, and as close as possible to the edge of the gate, i.e. no further than 15 cm.
- There must be a raceway tube at the point envisaged for routing cables.
- Point the transmitter TX at receiver RX with a maximum tolerance of 5°.

01. Remove the front glass panel (**fig. 19-1**).
02. Position the photocell at the point where the cable routing tube arrives.
03. Trace the drilling points using the base as a reference. Use a percussion drill to drill the wall, with a 5 mm tip, and insert 5 mm plugs.
04. Route the electric cables through the specific holes (pierce those required): see **fig. 19-2**.
05. Fix the base, using the relative screws **[B]** of **fig. 19-3** ensuring that the hole on the base **[C]** of **fig. 19-3** is aligned with the cable outlet. 2 self-tapping screws are also supplied for fixture on surfaces with a different density.
06. Connect the electrical cable in the relative terminals of both TX and RX (**fig. 19-4**).Connect the electrical cable in the relative terminals of both TX and RX (**fig. 19-5**) and to the blue terminal on the control board. No polarity needs to be observed.
07. Fix the covering shell **[D]** of **fig. 19-6** with the two screws **[E]** of **fig. 19-6** using a Phillips screwdriver. Lastly, insert the external cover **[F]** in **fig. 19-6** pressing it slightly to secure in place.

6.2 - INSTALLING AND CONNECTING THE FLASHING LIGHT FL100 (fig. 20)

Select the position of the flashing light so that it is in the vicinity of the gate in a visible location; It can be fixed on either a horizontal or vertical surface. **Fig. 20** shows the two options:

01. Remove the cover, unscrewing the screw if present;
02. Separate the base, unscrewing the screws present to route the electric cables;
03. Trace the drilling holes using the base as a reference and ensuring that the hole on the base is aligned with the cable outlet. vertical fixture (**A**) or horizontal fixture (**B**);
04. Use a percussion drill to drill the wall, with a 6 mm tip, and insert 6 mm plugs.
05. Fix the base, using the relative screws;
06. Connect the electric cables in the relative FLASH and “aerial” terminals as shown in the figure: To facilitate operations, remove terminals, make connections, then refit the terminals.
No polarity needs to be observed on the FLASH terminal, while in the case of the shielded cable connection of the aerial, the sheath must be connected;
07. Insert the lamp holder in the base, taking care to press it down so that it locks into place.
08. Secure the body of the flashing light to the fixing support and turn it left until it clicks into place, then secure by means of the screw.



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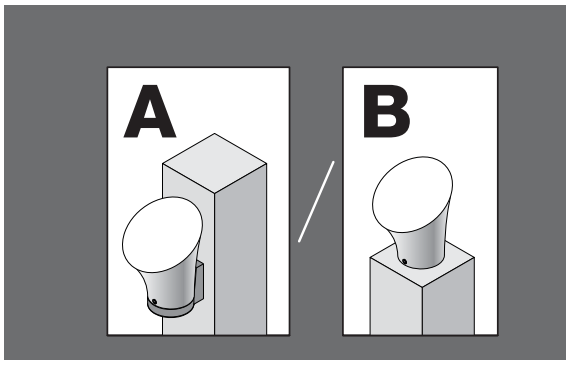
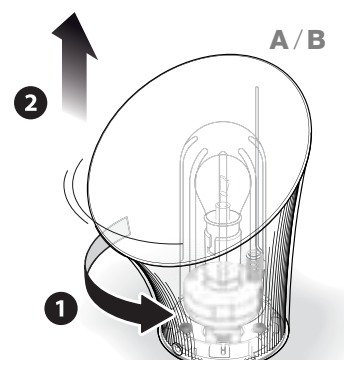
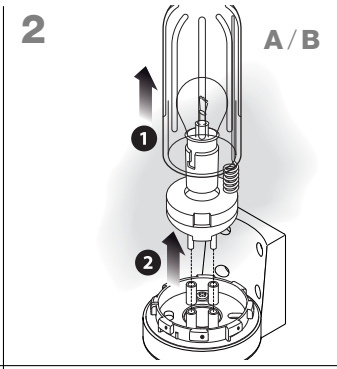
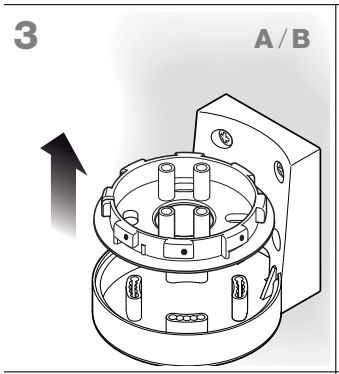
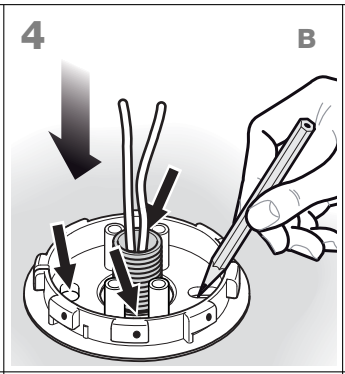
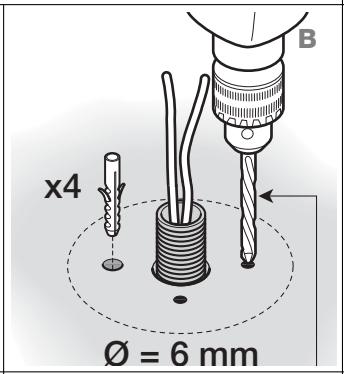

A
B

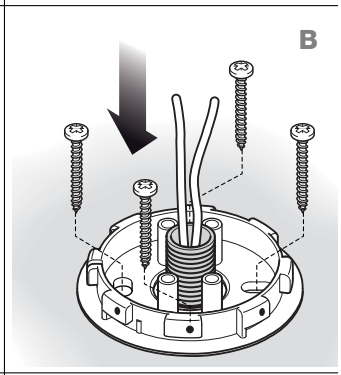

1
A / B
2
1

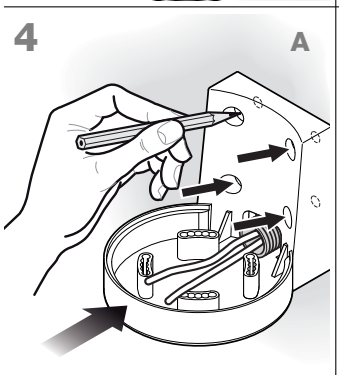

2
A / B
1
2

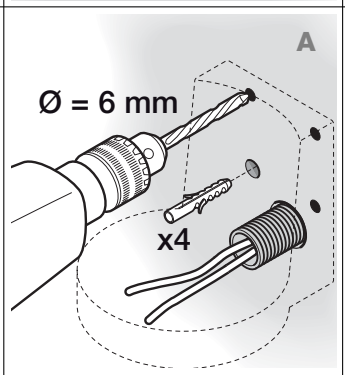

3
A / B

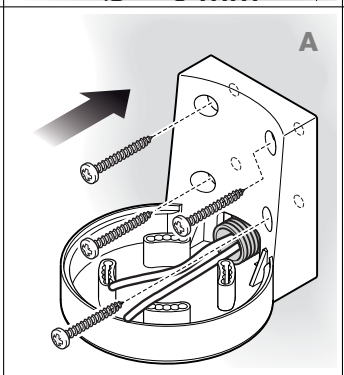

4
B


B
x4
Ø = 6 mm


B


4
A


A
Ø = 6 mm
x4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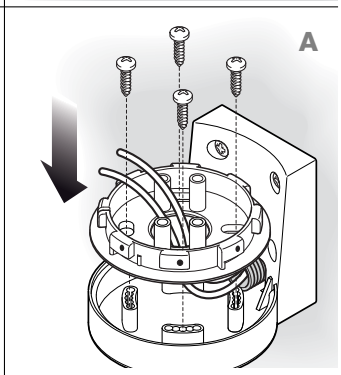
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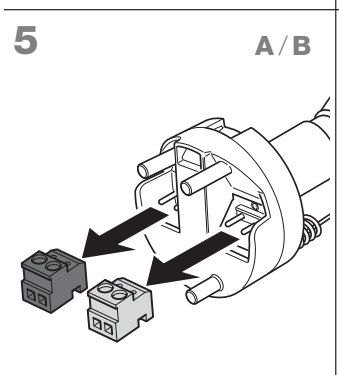
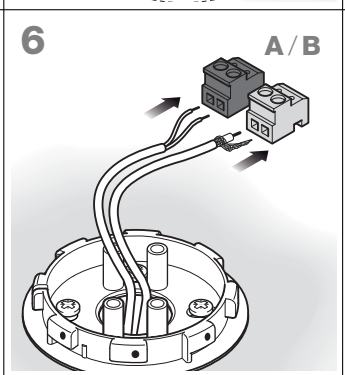
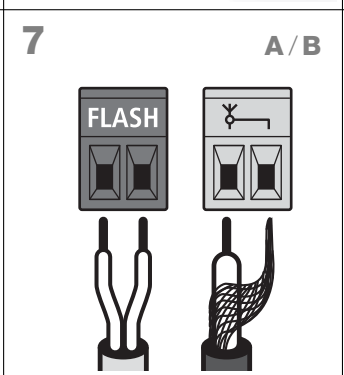
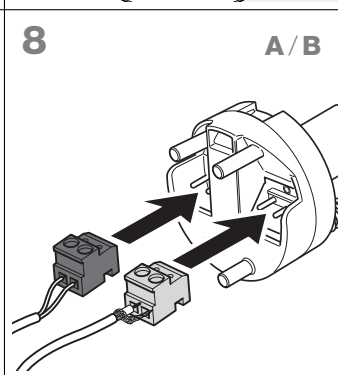
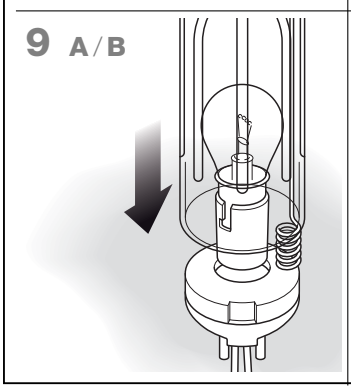
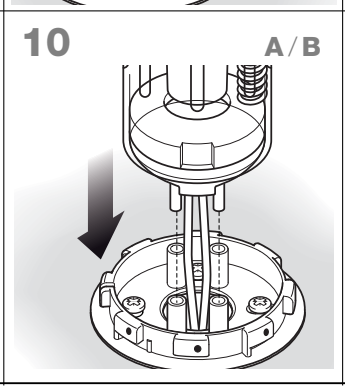

5
A / B


6
A / B


7
A / B
FLASH


8
A / B


9
A / B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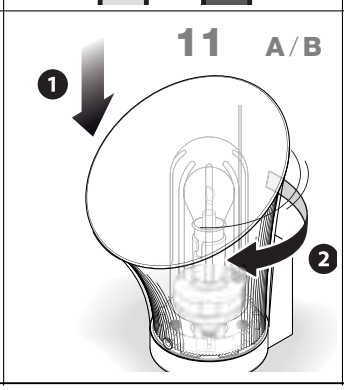
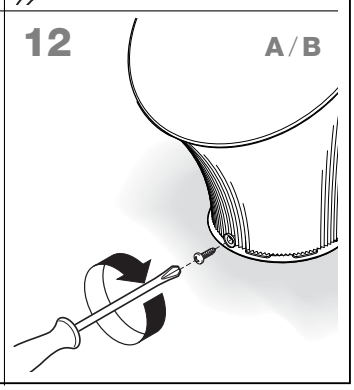
A / B


11
A / B
1
2


12
A / B

— STEP 7 —

7.1 - POWER SUPPLY CONNECTION

WARNINGS
– The power cable is in PVC and is designed for installation indoors. If installed outdoors, the entire cable must be covered with a protection ducting. Otherwise the cable can be replaced with a H07RN-F version.
– Final connection of the automation to the electrical mains or replacement of the cable supplied must be made exclusively by a qualified and skilled electrician, in observance of the current safety standards and the following instructions.

• **For automation operation tests and programming,** use the cable supplied, inserting the plug in an electrical socket. If the socket is far from the automation, an extension may be used in this phase.

• **For the automation testing and commissioning phase** the control unit must be permanently connected to the power mains, replacing the cable supplied with one of adequate length. To connect the cable to the gearmotor control unit, proceed as follows:

WARNING!
The power line must be fitted with a disconnect device that ensures complete shut-off of power to the automation. The disconnect device must have contacts with a sufficient gap to ensure complete disconnection, in compliance with the overvoltage category III, according to the installation instructions. If necessary, this device guarantees quick and safe disconnection from the mains power and therefore must be positioned in sight of the automation. If located in a concealed position, it must be equipped with a system that prevents inadvertent or unauthorised reconnection of power, to avoid potential hazards. The disconnect device is not supplied with the product.

01. Ensure that the gearmotor plug is not inserted in the mains socket;
02. Disconnect the electric cable on the gearmotor from the power terminal.
03. Loosen the collar (**fig. 21**) present below the terminal and extract the electric cable. Replace it with the permanent electric power cable.
04. Connect the electric cable to the gearmotor power terminal (**fig. 21**);
05. Tighten down the collar to secure the electric cable.

7.2 - INITIAL CHECKS

After powering up the control unit, perform the following checks:

01. Ensure that the led "ECSBus" **[A]** (**fig. 22**) flashes regularly with the frequency of 1 flash per second;
02. Ensure that the LED "SAFE" **[B]** (**fig. 22**) on the photocells is flashing (both on TX and RX); the type of flash is not important, as this depends on other factors; it is important that it is not off or permanently lit.
03. Ensure that the night-time light **[C]** (**fig. 22**) on the KS100 key-operated selector switch is on.
04. If these events do not occur, disconnect the control unit from the power supply and check the cable connections again with care. For other useful information, refer also to chapters 10.5 "Troubleshooting" and 10.6 "Diagnostics and signals".

7.3 - RECOGNITION OF THE CONNECTED DEVICES

On completion of initial checks, the control unit must be able to recognise the devices connected on the terminals "ECSBus" and "STOP".

01. On the control unit, press and hold P2 **[A]** (**fig. 22**) for at least 3 seconds, then release.
02. Wait a few seconds for the control unit to complete the device learning phase.
03. At the end of the learning phase the STOP led **[B]** (**fig. 22**) must remain lit, while the LED P2 **[C]** (**fig. 22**) should turn off. If the LED P2 flashes it means there is an error; see paragraph 10.5 "Troubleshooting".

The phase for learning connected devices can be repeated at any time also after installation (for example if a photocell is added); simply repeat the procedure from point 01.

7.4 - LEARNING THE GATE LEAF OPENING AND CLOSING ANGLES

After learning devices, the control unit must recognise the opening angles of the leafs. In this phase the system reads the leaf opening angle from the mechanical closing stop through to the mechanical opening stop. The presence of fixed and sufficiently strong mechanical stops is essential.

01. Release the motors by means of the special keys (see paragraph 11.3 - User's Guide) and move the leafs to mid-travel so that they are free to move in the opening and closing directions; then lock the motors.
02. On the control unit, press and release the key P3 **[B]** (**fig. 23**); wait for the control unit to perform the learning phase. closure of motor M1 through to the mechanical stop, closure of motor M2 through to the mechanical stop, opening of motor M2 and motor M1 through to the mechanical stop; complete closure of M1 and M2.
- If the first manoeuvre of one or both the leafs is not closure, press P3 to stop the learning phase, invert the polarity of the motor/s that opened the leaf, inverting the two brown and blue wires on the terminal.
- If the first motor to close is not M1, press P3 to stop the learning phase, and invert the motor connections on the terminals.
- During the learning phase, if any device trips (photocells, key-operated selector switch, P3 pressed etc.), the learning phase is stopped immediately. In this case the entire learning phase must be repeated.

03. If LED P3 **[A]** (**fig. 23**) flashes at the end of the learning phase, it means there is an error; see paragraph 10.5 "Troubleshooting".

The phase for learning the opening angles can be repeated at any time also after installation (for example if one of the opening stops is moved); simply repeat the procedure from point 1.

7.5 - CHECKING THE RADIO TRANSMITTERS

To check transmitters, simply press one of its 4 keys, ensure that the LED flashes and that the automation performs the associated command.
The command associated with each key depends on the mode in which they were memorised (see paragraph 10.4 "Memorising radio transmitters"). The transmitters supplied are already memorised and the keys, when pressed, send the following commands (**fig. 24**):

Key T1 =	"OPEN" command
Key T2 =	"Pedestrian opening" command
Key T3 =	"Only open" command
Key T4 =	"Only close" command

7.6 - SETTINGS

7.6.1 - Selecting the leaf speed

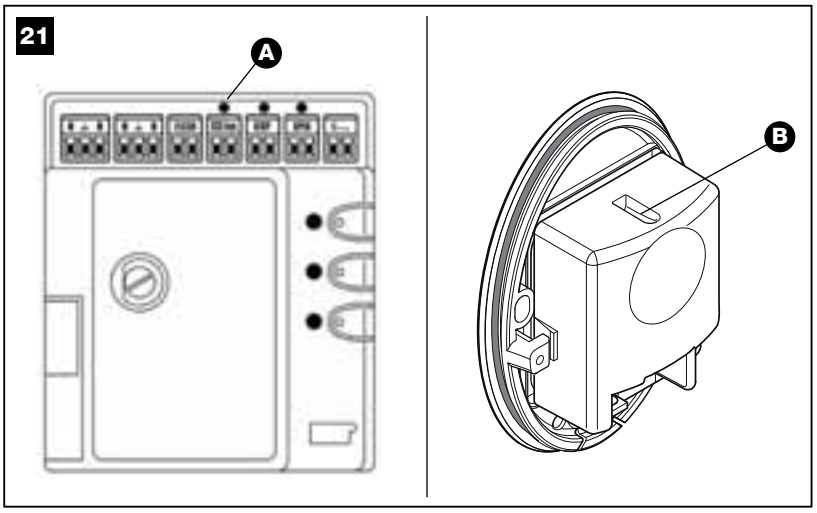
Leaf opening and closing can be at two speeds: "low" or "high".
To change from one speed to another, briefly press key P2 **[B]** (**fig. 25**); the corresponding led P2 **[A]** (**fig. 25**) will turn on or off; when the led is off, the speed setting is "low", when the led is on the speed setting is "high".

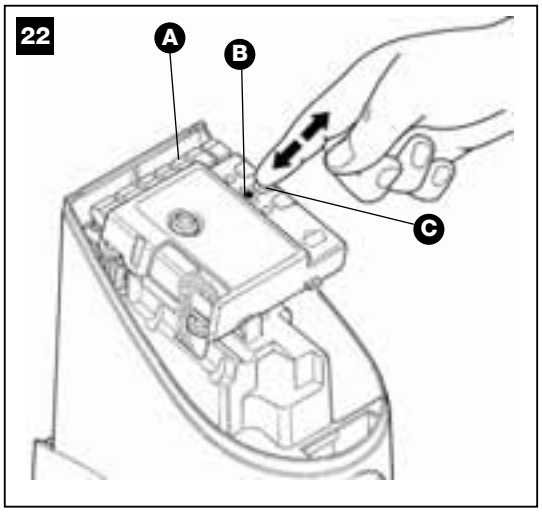
7.6.2 - Selecting the operating cycle

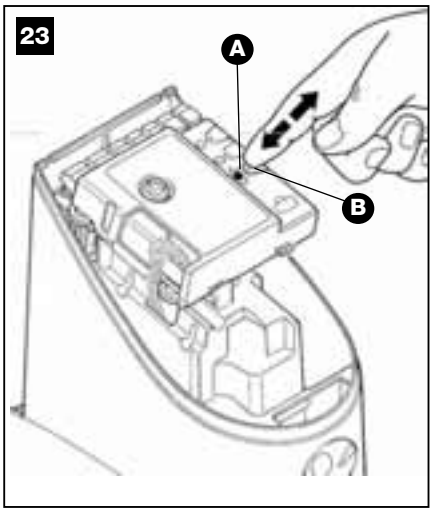
Gate opening and closing can be performed in two different operating modes:

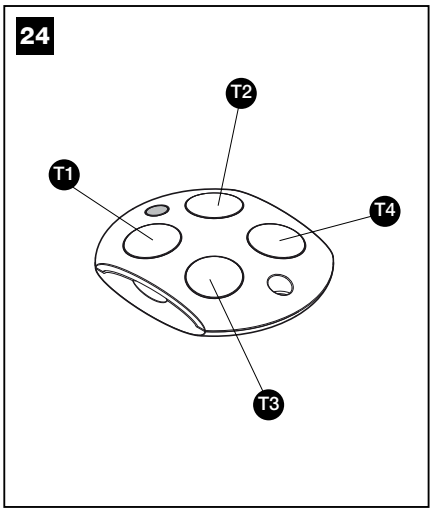
- Single cycle (semi-automatic): with one command, the gate opens and remains open until the next command which activates closing.
- Complete cycle (automatic closure): with one command, the gate opens and closes again automatically after a short interval (for the time interval, see paragraph 10.1 "Parameter settings via radio transmitter").

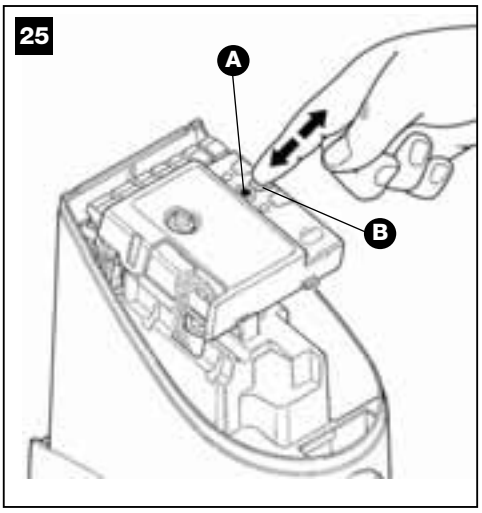
To change from one mode to another, briefly press key P3 **[B]** (**fig. 23**); the corresponding led **[A]** (**fig. 23**) will turn on or off; when the led is off, the cycle is "single", when the led is on the cycle is "complete".











TESTING AND COMMISSIONING

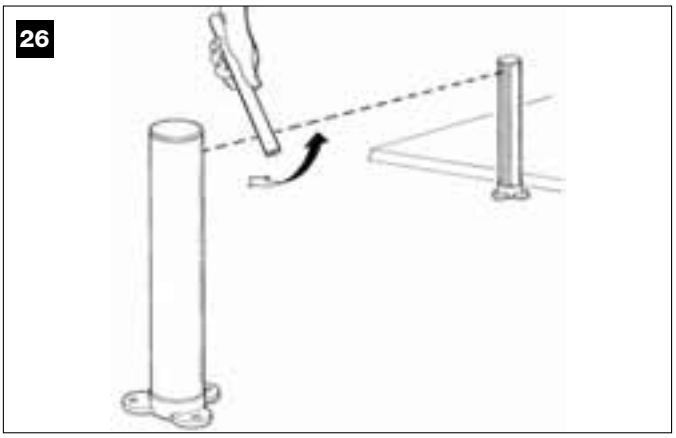
— STEP 8 —

These are the most important phases when setting up an automation, in order to guarantee maximum safety.
Testing can also be used as a periodic check of devices in the automation.

Testing of the entire system must be performed by skilled and qualified personnel, who are responsible for the tests required to verify the solutions adopted according to the risks present, and for ensuring observance of all legal provisions, standards and regulations, with particular reference to all requirements of the standard EN 12445 which establishes the test methods for testing automations for power-operated gates.

8.1 - TESTING

01. **Ensure that all instructions and warnings in STEP 1 have been strictly observed.**
02. Using the selector or radio transmitter, test gate opening and closing and ensure that leaf movement corresponds to the envisaged commands. Test several times to assess smooth operation of the gate and check for any defects in assembly or adjustment and any possible points of friction.
03. Check operation of all system safety devices one at a time (photocells, sensitive edges, etc.). In particular, each time a device trips, the "ECSBus" led on the control unit emits a longer flash to confirm control unit recognition of the event.
04. To test photocells and in particular that there is no interference with other devices, pass a cylinder (**fig. 26**) (diameter 5 cm, length 30 cm) through the optic axis, first close to the TX and then the RX and then mid-way between the two. Ensure that in all cases the device engages, changing from the active status to alarm status and vice versa; then ensure that the action envisaged is performed on the control unit: during closure inverts movement.



05. Measure the force as specified in the standard EN 12445. If the motor force control is used as an auxiliary function for reduction of impact force, test and identify the setting that obtains the best results.

8.2 - COMMISSIONING

Commissioning can only be performed after positive results of all test phases. Partial or "makeshift" commissioning is strictly prohibited.

01. Produce the technical documentation of the automation, which must include at least the following documents: overall layout drawing (e.g. **fig. 1**), electrical wiring diagram (e.g. **fig. 5**), risk assessment and solutions adopted, manufacturer's declaration of conformity for all devices used (use appendix 1)."EC declaration of conformity for components of WS2S".

02. Affix a dataplate on the door, specifying at least the following data: type of automation, name and address of manufacturer (responsible for commissioning), serial number, year of construction and CE mark.

03. Permanently attach to the gate the label supplied in the pack, regarding the procedure for manual locking/release of the gearmotor.

04. Compile and provide the automation owner with the declaration of conformity (use appendix 2)

05. Prepare and provide the automation owner with the User's guide; for this purpose appendix 3 "User's guide" may be used as an example (chapter 11.3).

06. Prepare and provide the owner with the form "Maintenance schedule", containing all maintenance instructions for all devices in the automation

07. Before commissioning the automation, ensure that the owner is adequately informed of all associated risks and hazards.

MAINTENANCE

— STEP 9 —

Maintenance must be performed in strict observance of the safety provisions in this manual and according to current legislation and standards.

The automation devices do not require special maintenance. However a check should be performed at least every six months to ensure complete efficiency of all devices.

For this purpose, the tests and checks envisaged in paragraph 8.1 "Testing" should all be performed, as well as all procedure in the paragraph "Maintenance operations permitted for the user".

If other devices are present, follow the instructions in the relative maintenance schedule.no manutenzione.

PRODUCT DISPOSAL

This product is an integral part of the automation and therefore must be disposed together with the latter.

As in installation, also at the end of product lifetime, the disassembly and scrapping operations must be performed by qualified personnel.

This product is made of various types of material, some of which can be recycled while others must be scrapped. Seek information on the recycling and disposal systems envisaged by the local regulations in your area for this product category.

Caution! – some parts of the product may contain pollutant or hazardous substances which, if disposed of into the environment, may cause serious damage to the environment or physical health.

As indicated by the symbol alongside, disposal of this product in domestic waste is strictly prohibited. Separate the waste into categories for disposal, according to the methods envisaged by current legislation in your area, or return the product to the retailer when purchasing a new version.

Caution! – Local legislation may envisage serious fines in the event of abusive disposal of this product.

FURTHER INFORMATION

— STEP 10 —

10.1 - ADVANCED SETTINGS

10.1.1 - Parameter settings via radio transmitter

The radio transmitter can be used to set a number of control unit operating parameters: there are eight parameters.

1) Pause time: the time for which the leafs remain open (in the case of automatic closure).

2) Pedestrian opening Pedestrian leaf opening mode.

3) Motor force motor force over which the control unit recognises an obstacle and inverts movement.

4) "OPEN" function: sequence of movements associated with each "OPEN" command.

5) Level of discharge of motor 1 on closing sets the duration of the "brief inversion" of the motor after a closing manoeuvre, serving to reduce the final residual force.

6) Level of discharge of motor 1 on opening: sets the duration of the "brief inversion" of the motor after an opening manoeuvre, serving to reduce the final residual force.

7) Level of discharge of motor 2 on closing sets the duration of the "brief inversion" of the motor after a closing manoeuvre, serving to reduce the final residual force.

8) Level of discharge of motor 2 on opening: this sets the duration of the "brief inversion" of the motor after execution of the opening manoeuvre, with the aim of reducing the final residual force. The parameter setting operation can be made with any of the radio transmitters, provided they are memorised in mode 1, such as those supplied (see paragraph 10.4.1 "Memorisation mode 1").

If there is no transmitter memorised in mode 1 a single one may be memorised for this phase, after which it must be deleted immediately (see paragraph 10.4.4 "Deleting a radio transmitter").

CAUTION! – When making settings via a transmitter, the control unit must be allowed sufficient time to recognise the command via radio; in practice

the keys must always be pressed and released slowly, pressing for at least one second, releasing for one second and so on.

To program the parameters, see Table 3.

01. Press T1 and T2 simultaneously (**fig. 27**) on the radio transmitter for at least 5 s.
02. Release the two keys.
03. Within three seconds, complete the action as specified in Table 6 according to the parameter to be modified.

Example: to set the pause time at 40 s.
01. Press and hold the keys T1 and T2 simultaneously for at least 5 s seconds.
02. Release T1 and T2
03. Press T1 three times

All parameters can be adjusted as required without any contraindications, only the "Motor force" setting may require special attention:

- Do not use force values to compensate for anomalous points of friction on the gate. Excessive force settings may impair safety system operation or cause damage to the gate.
- If the "Motor force control" is used in support of the system for impact force reduction, after each adjustment the force measurement procedure must be performed, as envisaged by standard EN 12445.
- Weather conditions can influence gate movement; new adjustments may be required periodically.

To program the parameters, see Table 4.

01. Press T1 and T3 simultaneously (**fig. 28**) on the radio transmitter for at least 5 s.
02. Release the two keys.
03. Within three seconds, complete the action as specified in Table 4 according to the parameter to be modified.

Example: to set discharge on closing of motor 2 on level 4.
01. Press and hold the keys T1 and T3 simultaneously for at least 5 s.

TABLE 3

Parameters	NO.	Value	**Action:** operation to be performed at point 3 of the settings phase
Pause Time	1	10s	Press T1 once
	2	20s (*)	Press T1 twice
	3	40s	Press T1 three times
	4	80s	Press T1 four times
Pedestrian opening	1	Opening of 1 leaf to mid-travel	Press T2 once
	2	Total opening of 1 leaf (*)	Press T2 twice
	3	Partial opening of 2 leafs to 1/4 of travel	Press T2 three times
	4	Partial opening of 2 leafs to mid-travel	Press T2 four times
Motor force	1	Low	Press T3 once
	2	Medium low (*)	Press T3 twice
	3	Medium high	Press T3 three times
	4	High	Press T4 four times
"OPEN" function	1	"Open", "Stop", "Close", "Stop"	Press T4 once
	2	"Open", "Stop", "Close", "Open" (*)	Press T4 twice
	3	"Open", "Close", "Open", "Close"	Press T4 three times
	4	Opening only	Press T4 four times

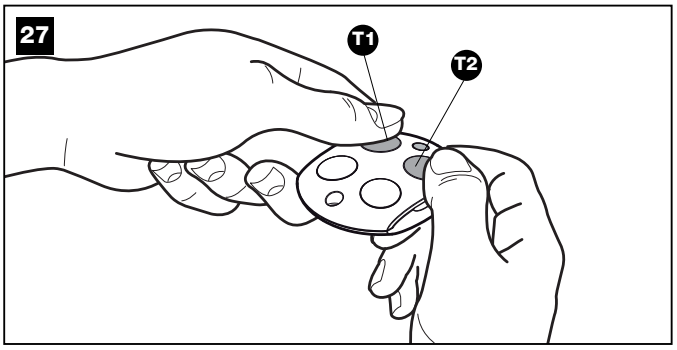
(*) *Factory setting*

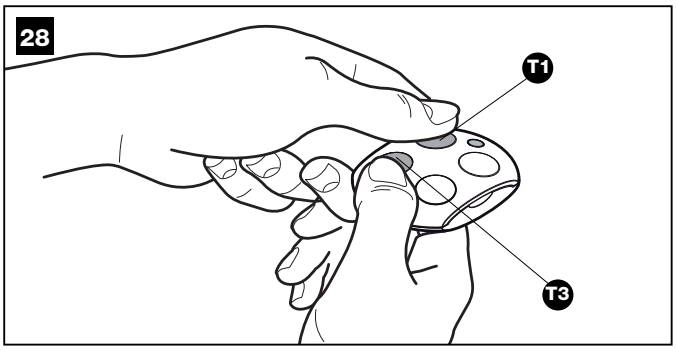
TABLE 4

Parameters	NO.	Value	Actions to be performed
Discharge on closing Motor 1	1	No discharge (*)	Press T1 once
	2	0.1 s (Minimum)	Press T2 twice
	3		Press T1 three times
	4		Press T1 four times
	5	0.4 s (Medium)	Press T1 five times
	6		Press T1 six times
	7		Press T1 seven times
	8	0.7 s (Maximum)	Press T1 eight times
Discharge on opening Motor 1	1	No discharge (*)	Press T2 once
	2	0.1 s (Minimum)	Press T2 twice
	3		Press T2 three times
	4		Press T2 four times
	5	0.4 s (Medium)	Press T2 five times
	6		Press T2 six times
	7		Press T2 seven times
	8	0.7 s (Maximum)	Press T2 eight times
Discharge on closing Motor 2	1	No discharge (*)	Press T3 once
	2	0.1 s (Minimum)	Press T3 twice
	3		Press T3 three times
	4		Press T3 four times
	5	0.4 s (Medium)	Press T3 five times
	6		Press T3 six times
	7		Press T3 seven times
	8	0.7 s (Maximum)	Press T3 eight times
Discharge on opening Motor 2	1	No discharge (*)	Press T4 once
	2	0.1 s (Minimum)	Press T4 twice
	3		Press T4 three times
	4		Press T4 four times
	5	0.4 s (Medium)	Press T4 five times
	6		Press T4 six times
	7		Press T4 seven times
	8	0.7 s (Maximum)	Press T4 eight times

(*) *Factory setting*

02. Release T1 and T3
03. Press T3 four times





10.1.2 - Checking settings via a radio transmitter

With a radio transmitter memorised in Mode 1 the user can check settings at any time for each parameter, as follows:

To display the parameters, see Table 5.

01. Press T1 and T2 simultaneously on the radio transmitter for at least 5 s.
02. Release the two keys.
03. Within three seconds, complete the action as specified in **Table 5** according to the parameter to be modified.
04. Release the key when the flashing light starts to flash
05. Count the number of flashes and, according to the number, check the corresponding value on Table 3.

Example: After pressing T1 and T2 for 5 s followed by T1, if the flashing light flashes three times, the pause time is set at 40 s.

To display the parameters in Table 6:

01. Press T1 and T3 simultaneously on the radio transmitter for at least 5 s.
02. Release the two keys.
03. Within three seconds, complete the action as specified in **Table 6** according to the parameter to be modified.
04. Release the key when the flashing light starts to flash.
05. Count the number of flashes and, according to the number, check the corresponding value on Table 4.

TABLE 5

Parameter	Action
Pause Time	Press and hold T1
Pass door	Press and hold T2
Motor force	Press and hold T3
“OPEN” function	Press and hold T4

TABLE 6

Parameter	Action
Level of discharge of motor 1 on closing	Press and hold T1
Level of discharge of motor 1 on opening	Press and hold T2
Level of discharge of motor 2 on closing	Press and hold T3
Level of discharge of motor 2 on opening	Press and hold T4

10.2 - OPTIONAL ACCESSORIES

As well as the devices in WS2S, there are a number of optional accessories which may be used to integrate the automation system.

PR1: 24 V buffer battery; in the event of a mains power failure, this guarantees at least 10 complete cycles.

PF: 24 V solar power system; useful in cases in which there is no electrical mains power.

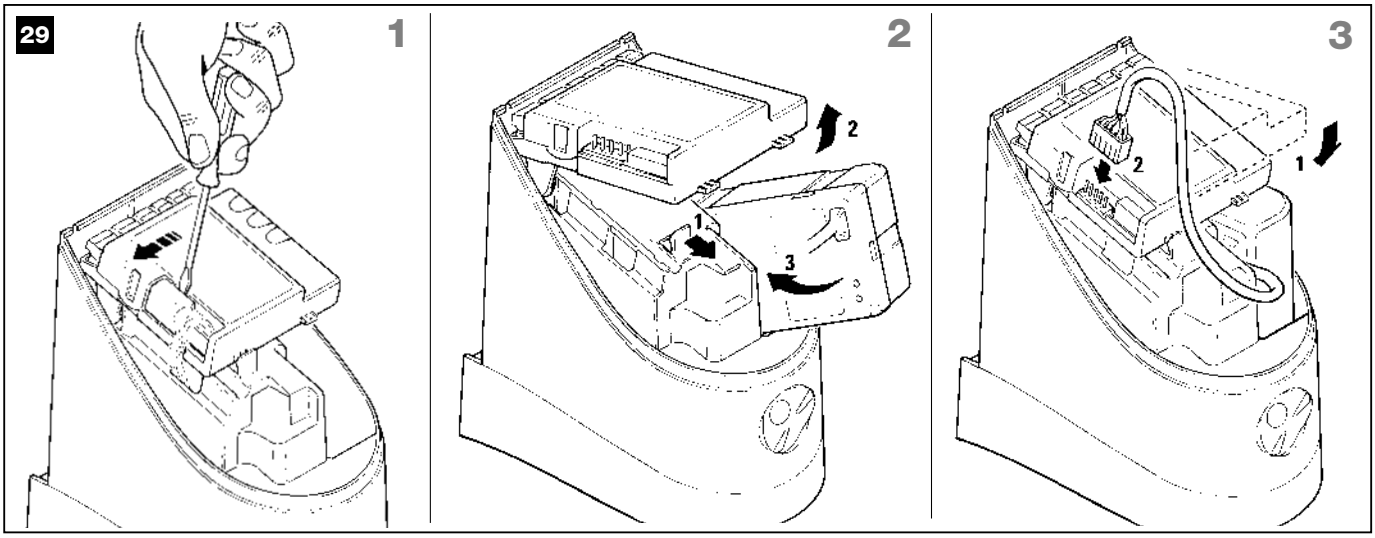
PT50: Pair of columns (height 500 mm) with photocell

PT100: Pair of columns (height 1000 mm) with two photocells
For information on the new accessories, refer to the MHOUSE catalogue or visit the website www.mhouse.biz.

10.2.1 - Installing the PR1 buffer battery (fig. 29)

CAUTION! - The electric connection of the battery to the control unit must only be made after completing all installation and programming phases, as the battery constitutes an emergency power supply.

To install and connect the buffer battery PR1 to the control unit, refer to **fig. 29** and the PR1 instruction manual.
When the automation is powered by the buffer battery, 60 seconds after a manoeuvre is completed, the control unit automatically switches off the output “ECSbus” (and all connected devices), output Flash and all leds, with the exception of the ECSbus led, which flashes at slower intervals; this indicates the “Standby” function. When the control unit receives a command, it restores normal operation (with a short delay). This function is used to reduce consumption; an important factor when the unit is powered by battery.



10.2.2 - Installing the PF solar power supply system (fig. 30)

CAUTION! - When the automation is powered exclusively by the solar power system "PF", IT MUST NEVER BE POWERED at the same time by the mains.

To connect the PF solar power system to the control unit, refer to **fig. 30** and the PF instruction manual.

When the automation is powered by the solar panel, 60 seconds after a manoeuvre is completed, the control unit automatically switches off the output "ECSbus" (and all connected devices), output Flash and all leds, with the exception of the ECSbus led, which flashes at slower intervals; this indicates the "Standby" function. When the control unit receives a command, it restores normal operation (with a short delay). This function is used to reduce consumption; an important factor when the unit is powered by photovoltaic panels.

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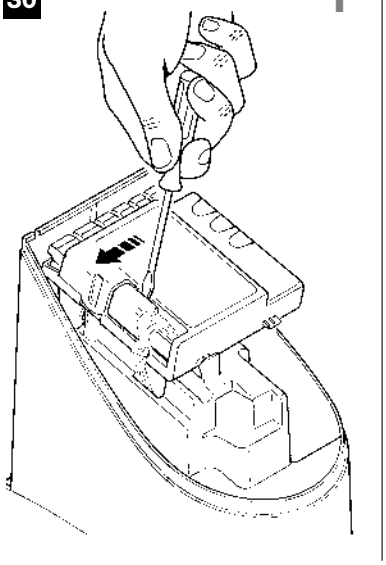

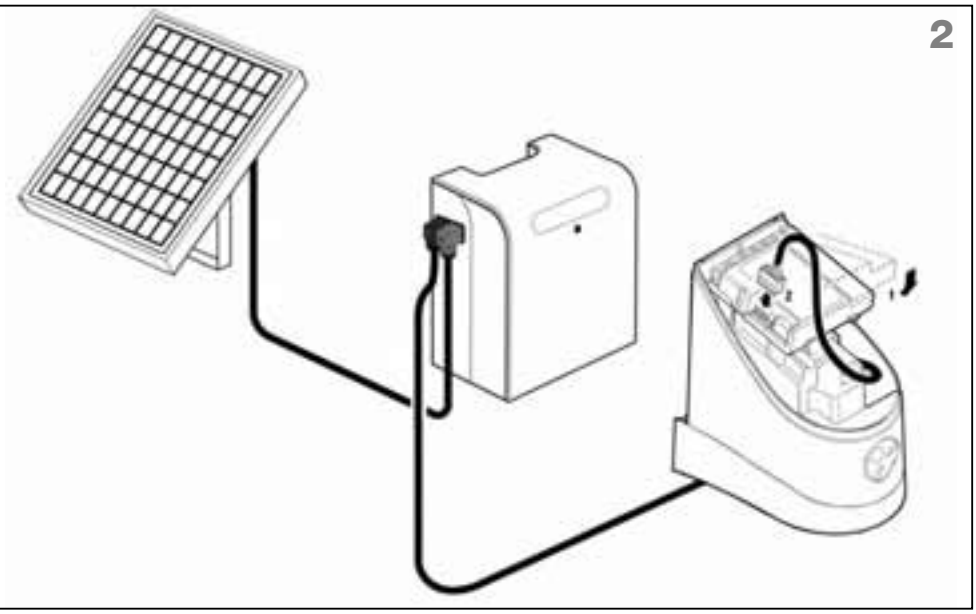

10.2.3 - Maximum possible number of cycles per day

This product is specifically designed to operate also with the PF solar power supply system. Special technical provisions have been envisaged to minimise energy consumption when the automation is stationary, by turning off all devices not essential to operation (for example photocells and the key-operated selector switch). In this way all energy available and stored in the battery is used to move the gate.

Caution! - When the automation is powered by the solar power system "PF", IT MUST NEVER BE POWERED at the same time by the mains.

Application limits: maximum possible number of cycles per day within a set period of the year.

The PF solar power system enables complete power autonomy of the automation, until the energy produced by the photovoltaic panel and stored in the battery remains above the amount consumed during gate manoeuvres. A simple calculation enables an estimate of the maximum number of cycles per day performed by the automation in a certain period of the year, provided that a positive energy balance is maintained.

The first step in **calculating the energy available**, is dealt with in the PF instruction manual; the second step in **calculating the energy consumed** and therefore the maximum number of cycles per day, is dealt with in this chapter.

Calculating the energy available

To calculate the energy available (refer also to the PF instruction manual) proceed as follows:

01. On the terrestrial map supplied in the PF kit instruction manual, locate the point of system installation; then read the value **Ea** and the degrees of **latitude** of this location (E.g. Ea = 14 and degrees = 45°N)

02. On the graphs (North or South) supplied in the PF kit instruction manual, locate the curve for the location's **latitude** (e.g. 45°N)

03. Choose the **period of the year** on which to base the calculation, or select **the lowest point** of the curve to calculate **the worst period** of the year; then read the corresponding value Am (e.g. December, January: Am= 200)

04. Calculate the value of energy available **Ed** (produced by the panel) multiplying Ea x Am = Ed (e.g. Ea = 14; Am = 200 therefore Ed = 2800)

Calculating the energy consumed

To calculate the energy consumed by the automation, proceed as follows:

05. On the table below, select the box corresponding to the intersection between the line with the **weight** and the column with the **opening angle** of the gate leaf. The box contains the value of the **severity index** (K) for each manoeuvre (e.g. WS2S with a leaf of 130 Kg and opening of 100°; K = 106).

	Opening angle		
Leaf weight	≤95° (B≈200)*	95÷105° (B≈130)*	105÷110°(B≈70)*
< 75 Kg	54	72	101
75-120 Kg	65	84	134
120-150 Kg	80	106	196
150-180 Kg	105	150	320

(*) value B specified in the table represents the optimal value; if B is a lower value, add 20% to value K specified in the table.

06. On the **table A** below, select the box corresponding to the intersection between the line with the Ed value and the column with the K value. The box contains the maximum possible number of cycles per day (e.g. Ed = 2800 and K= 106; cycles per day ≈ 22)

If the number obtained is too low for the envisaged use or is located in the "area not recommended for use", the use of 2 or more photovoltaic panels may be considered, or the use of a photovoltaic panel with a higher power. Contact the Mhouse technical assistance service for further information.

The method described enables the calculation of the maximum possible number of cycles **per day** that can be completed by the automation while running on solar power. The calculated value is considered an average value and the same for all days of the week. Considering the presence of the battery, which acts as an energy "storage depot", and the fact that the battery enables automation autonomy also for long periods of bad weather (when the photovoltaic panel produces very little energy) it may be possible to exceed the calculated maximum possible number of cycles per day, provided that the average of 10-15 days remains within the envisaged limits.

Table B below specifies the maximum possible number of cycles, according to the manoeuvre's **severity index** (K), using **exclusively the energy stored** by the battery. It is considered that initially the battery is completely charged (e.g. after a prolonged period of good weather or recharging via the optional PCB power supply unit) and that the manoeuvres are performed within a period of 30 days.

When the battery runs out of the stored energy, the led starts to indicate the battery low signal by flashing briefly every 5 seconds, accompanied by a "beep".

TABLE A - Maximum possible number of cycles per day

Ed	K≤75	K=100	K=125	K=150	K=175	K=200	K=225	K=250	K=275	K=300	K≥325
9500	123	92	74	61	53	46	41	37	33	31	28
9000	116	87	70	58	50	44	39	35	32	29	27
8500	109	82	66	55	47	41	36	33	30	27	25
8000	103	77	62	51	44	39	34	31	28	26	24
7500	96	72	58	48	41	36	32	29	26	24	22
7000	89	67	54	45	38	34	30	27	24	22	21
6500	83	62	50	41	35	31	28	25	23	21	19
6000	76	57	46	38	33	29	25	23	21	19	18
5500	69	52	42	35	30	26	23	21	19	17	16
5000	63	47	38	31	27	24	21	19	17	16	14
4500	56	42	34	28	24	21	19	17	15	14	13
4000	49	37	30	25	21	19	16	15	13	12	11
3500	43	32	26	21	18	16	14	13	12	11	10
3000	36	27	22	18	15	14	12	11	10	9	8
2500	29	22	18	15	13	11	10	9	8	7	7
2000	23	17	14	11	10	9	8	7	6	6	5
1500	16	12	10	8	7	6	5	**Area of use not recommended**			
1000	9	7	6								

TABLE B - Maximum number of cycles using exclusively battery power

K≤75	K=100	K=125	K=150	K=175	K=200	K=225	K=250	K=275	K=300	K≥325
741	556	445	371	318	278	247	222	202	185	171

10.3 - ADDING OR REMOVING DEVICES

An automation using WS2S enables devices to be added or removed at any time.
Caution! – Do not add devices before ensuring that they are fully compatible with WS2S; for further details, contact the MHOUSE technical assistance.

10.3.1 - ECSBus

ECSBus is a system that enables connections of ECSBus devices using just two wires, which convey both electrical power and communication signals. All devices are connected in parallel on the same 2 wires of the ECSBus; each device is recognised individually as it is assigned a unique address during installation.
Photocells and other devices using this system can be connected to ECSBus, such as safety devices, control buttons, indicator lights etc. For information on ECSBus devices, refer to the MHOUSE catalogue or visit the website www.mhouse.com.
A special learning phase enables the control unit to recognise all connected devices individually, and enables precise diagnostics procedures. For this reason, each time a device connected to ECSBus is added or removed, the learning phase must be performed on the control unit; see paragraph 10.3.3 “Learning other devices”.

10.3.2 - STOP Input

STOP is the input that causes immediate shutdown of the movement (followed by a brief inversion of the manoeuvre). This input can be connected to devices with contact types Normally Open (NO, as in the case of the KS100 selector switch), Normally Closed (NC) or devices with a constant resistance of 8.2 kΩ, such as sensitive edges.

When set accordingly, more than one device can be connected to the STOP input, also different from one another; see **Table 7**.

TABLE 7

2nd device type:		1st device type:		
		NO	**NC**	**8.2 KΩ**
	NO	In parallel (***note 2***)	(***note 1***)	In parallel
	NC	(***note 1***)	In series (***note 3***)	In series
	8,2KΩ	In parallel	In series	(***note 4***)

Note 1. *The NO and NC combination can be obtained by placing the two contacts in parallel, and placing an 8.2kΩ resistance in series with the NC contact (it is, therefore, possible to combine 3 devices: NO, NC and 8,2kΩ).*
Note 2. *Any number of NO devices can be connected to each other in parallel.*
Note 3. *Any number of NC devices can be connected to each other in series.*
Note 4. *Only two devices with an 8.2 kΩ constant resistance output can be connected in parallel; multiple devices must be connected “in cascade” with a single 8.2 kΩ termination resistance.*

Caution! – **If the STOP input is used to connect devices with safety functions, only the devices with 8.2 kΩ constant resistance output will guarantee the fail-safe category 3.**

As with the ECSBus, the control unit recognises the type of device connected to the STOP input during the learning phase; subsequently the control unit gives a STOP command when it detects a variation with respect to the learned state.

10.3.3 - Recognition of other devices

The learning operation of the devices connected to the ECSBus and STOP input is usually carried out during the installation phase; if devices are added or removed the learning operation can be carried out again as follows:

01. Press and hold key P2 **[B]** on the control unit for at least three seconds (**fig. 31**), then release the key.
02. Wait a few seconds for the control unit to complete the device learning phase.
03. At the end of the learning phase the LED P2 **[A]** (**fig. 31**) should switch off. If the LED P2 flashes it means there is an error; see paragraph 10.5 “Troubleshooting”.
04. After having added or removed a device the automation test must be carried out again as specified in paragraph 8.1 “Testing”.

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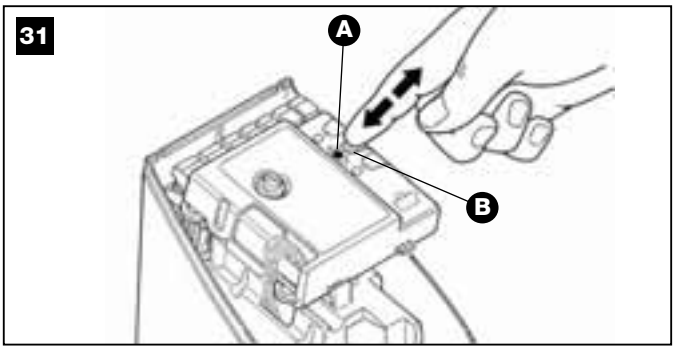

10.3.4 - Adding optional photocells

Additional photocells to those supplied with the WS2S can be installed at any time. In systems for the automation of sliding gates they must be installed as shown in **fig. 32**.
In order for the control unit to correctly recognise the photocells they must be assigned with addresses using special electric jumpers. The address assignment operation must be carried out on both TX and RX (placing the electric jumpers in the same way) and it is important to check that there are not any other pairs of photocells with the same address. The photocell address assignment operation is necessary for them to be correctly recognised among the other devices of the ECSBus and to assign them their function.

01. Open the housing of the photocell.
02. Identify the position in which they are installed according to Figure 70 and place the jumper according to **Table 8**.

Unused jumpers must be placed in the special compartment for future use (**fig. 33**).

03. Carry out the learning phase as described in paragraph 10.3.3 “Recognition of other devices”.

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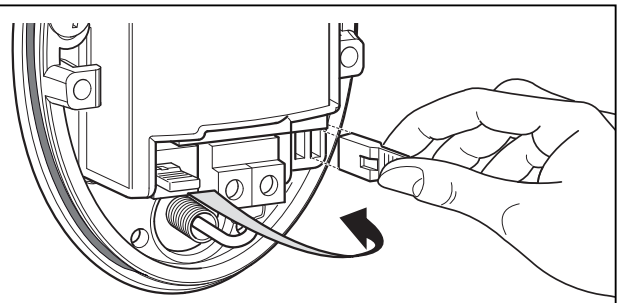

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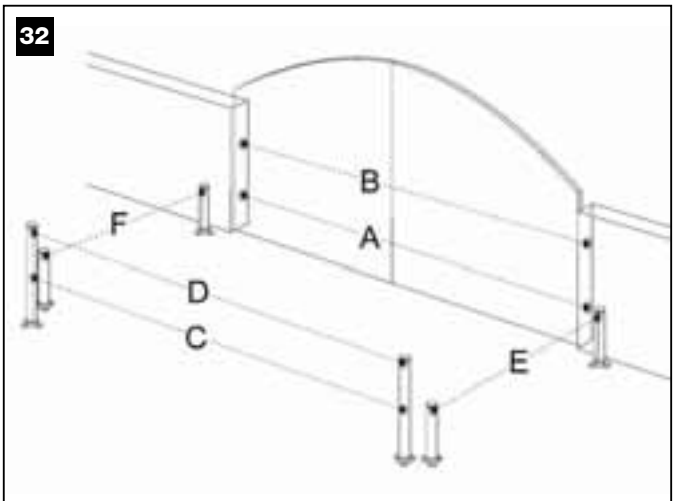
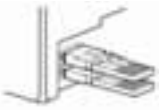


TABLE 8

Photocell		Jumpers	Photocell		Jumpers
A	Photocell h=50 cm; triggered on closure		**D**	Photocell on right with activation on opening	
B	Photocell h=100 cm; triggered on closure		**E**	Photocell on left with activation on opening	
C	Photocell h=50 cm; triggered on opening and closure		**F**	Photocell h=100 cm; triggered on opening and closure	

10.4 - MEMORIZING ALL RADIO TRANSMITTERS

The control unit contains a radio receiver for GTX4 transmitters; the transmitter included in the box is already memorised and ready to use.
There are two ways of memorising a new transmitter:

• **Mode 1**: in this “mode” the radio transmitter is used as a whole, i.e. all the keys carry out a preset command (the transmitter supplied with the WS2 is memorised using Mode 1).Obviously a radio transmitter in mode 1 can only control one single automation; that is:

Key T1	“OPEN” Command
Key T2	“Pedestrian opening” command
Key T3	“Only open” command
Key T4	“Only close” command

• **Mode 2**: each key can be associated to one of the four commands available. If this mode is used appropriately 2 or more different automations can be controlled, for example:

Key T1	“Only open” Automation N° 1 command
Key T2	“Only close” Automation N° 1 command
Key T3	“OPEN” Automation N° 2 command
Key T4	“OPEN” Automation N° 3 command

Obviously each transmitter is treated separately and for one single control unit there can be some transmitters memorised in mode 1 and others in mode 2.

The overall maximum memory capacity is of 150 units; mode 1 memorisation occupies one unit per transmitter while mode 2 occupies one unit per key.

Caution! – As memorisation procedures have a time limit (10 s), it is important to read the instructions in the next paragraphs before starting.

10.4.1 - Memorisation mode 1

01. Press key P1 **[B]** (**fig. 33**) for at least 3 s. When the LED P1 **[A]** (**fig. 33**) switches on release the key.

02. Within 10 s press any one key on the transmitter for at least 3 s to memorise it. If the memorisation procedure is successful, the LED P1 will emit 3 flashes.

03. If there are other transmitters to be memorised repeat step 2 within the next 10 s otherwise the memorisation phase will end automatically.

10.4.2 - Memorisation mode 2

With Mode 2 transmitter memorisation each key can be associated with any one of the commands shown in table 10.

In Mode 2 each key requires its own memorisation phase.

01. If the transmitter to be memorised is already memorised (such as the transmitters supplied which are already memorised in mode I) the transmitter must be deleted following the procedure described in: “10.4.4 - Deleting a radio transmitter”.

02. Press key P1 **[B]** (**fig. 33**) on the control unit the number of times equal to the required command, according to **Table 9** (*e.g. 3 times for the “Only open” command*).

03. Check that LED P1 **[A]** (**fig. 33**) flashes quickly for a number of times equal to the command selected.

04. Within 10 s press the required key on the radio transmitter for at least 2 s to memorise it. If the memorisation procedure is successful, the LED P1 will emit 3 slow flashes.

05. If there are other transmitters to be memorised for the same type of command, repeat step 03 within the next 10 s otherwise the memorisation phase will end automatically.

TABLE 9

Once	"OPEN" Command	Activates the automation as described in Table 3 (Open function)
Twice	"Pedestrian opening" command	Activates partial opening of one or two leafs as described in Table 3 (Pedestrian opening)
Three times	"Only open" command	Activates opening of the leafs (open - stop - open etc.)
Four times	"Only close" command	Activates closing of the leafs (close - stop - close etc.)
Five times	"Stop" command	Stops the manoeuvre
Six times	"Apartment block open" command	On opening the command has no effect, and on closing inverts movement, i.e. opening of the leafs l'inversione del movimento, cioè l'apertura delle ante
Seven times	"High priority open" command	Gives command even when automation is blocked
Eight times	"Pedestrial opening 2" command	Activates partial opening of the leaf M2, equal to approx. mid-travel
Nine times	"Pedestrial opening 3" command	Activates partial opening of the two leafs, equal to approx. mid-travel
Ten times	"Open+ block automation" command	It causes an opening manoeuvre, after which the automation is blocked; The control unit accepts no further commands with the exception of "Open high priority" and "Release" automation
Eleven times	"Close + block automation" command	It causes a closure manoeuvre, after which the automation is blocked; The control unit accepts no further commands with the exception of "Open high priority" and "Release" automation
Twelve times	"Block automation" command	It causes the manoeuvre to stop and the automation to block; The control unit accepts no further commands with the exception of "Open high priority" and "Release" automation
Thirteen times	"Unblock automation" command	It causes the automation to be released and normal operation to resume

10.4.3 - Remote memorisation

A new radio transmitter can be memorised on the control unit without having to use the unit itself. It is sufficient to have an "OLD" working and memorised radio transmitter. The "NEW" radio transmitter will "inherit" the characteristics of the OLD one; in other words if the old one is memorised in Mode 1 then the NEW one will also be memorised in Mode 1; in this case during the memorisation phase press any one key on the two transmitters. If the OLD radio transmitter is memorised in Mode 2 press the key with the required command on the OLD transmitter and press the key on the NEW transmitter with which you wish to associate the new command.

Take the two transmitters and position yourself within the action range of the automation and follow the following steps:

01. Press the key on the NEW radio transmitter for at least 5 s then release it.
02. Press the key on the OLD radio transmitter slowly 3 times.
03. Press the key on the NEW radio transmitter slowly once.
At this point the NEW radio transmitter will be recognised by the control unit and will take on the characteristics of the OLD one.

Repeat these steps for each new transmitter to be memorised.

10.4.4 - Deleting a radio transmitter

It is necessary to have a radio transmitter to delete it.
If the transmitter is memorised in Mode 1 one single deletion phase is sufficient and at point 3 any key can be pressed. If the transmitter is memorised in Mode 2 a deletion phase must be carried out for each key.

01. Press and hold key P1 **[B]** (**fig. 34**) on the control unit.
02. Wait for the LED P1 **[A]** (**fig. 34**) to switch on and within three seconds
03. Press the key on the radio transmitter to be deleted for at least three seconds. If deletion is successful LED P1 will emit five quick flashes. If LED P1 emits one slow flash it means that the deletion has not been completed because the transmitter is not memorised.
04. To delete other transmitters keep key P1 pressed and repeat step 3 within 10 seconds otherwise the deletion procedure will end automatically.

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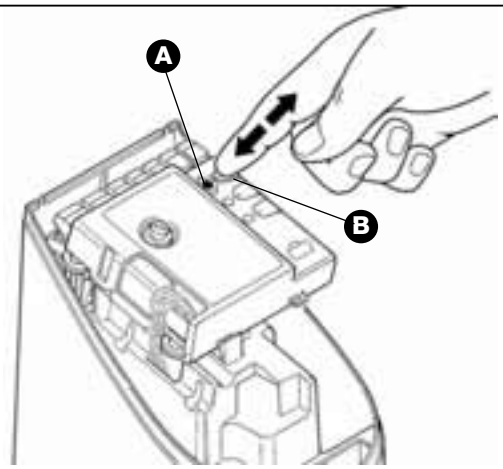

10.4.5 - Deleting all radio transmitters

This procedure deletes all memorised transmitters.

01. Press and hold key P1 **[B]** (**fig. 34**) on the control unit.
02. Wait for LED P1 **[A]** (**fig. 34**) to switch on, then off and then flash 3 times.
3 Release key P1 precisely when the LED flashes the third time.
4 Wait about 4 s for deletion to be completed, during which the LED P1 will emit quick flashes.

If the procedure is successful after a few moments the LED P1 will emit 5 slow flashes.

10.5 - TROUBLESHOOTING

Table 10 gives possible indications on how to deal with malfunctions that may be met during installation or due to a fault.

10.6 - DIAGNOSTICS AND SIGNALS

Some devices directly provide particular signals to describe the state of operation or eventually a malfunction.

10.6.1 - Photocells

The photocells contain a LED "SAFE" **[A]** (**fig. 36**) that provides information at any moment on the state of operation; see **Table 11**.

TABLE 10 (fig. 35)

Symptoms	Probable cause and possible solution
The radio transmitter does not emit any signal (the LED **[A]** does not light up)	• Check whether the batteries are flat and if necessary replace them (page 36)
The manoeuvre does not start and the LED "ECSBus" **[B]** does not flash	• Check that the power supply cable is correctly inserted in the mains socket • Check that the fuses **[E]** and **[F]** have not been activated; if this is the case check the cause of the fault and replace them with other fuses with the same characteristics
The manoeuvre does not start and the flashing light is off	• Check that the command is actually received. If the command reaches the OPEN input the relevant LED "OPEN" **[D]** should light up; if a radio transmitter is used the LED "ECSBus" should emit two long flashes
The manoeuvre does not start and the flashing light flashes	• Check that the STOP input is active, in other words that the LED "STOP" **[C]** is on. If this is not the case check the device connected to the STOP input • The photocell test carried out at the beginning of each manoeuvre is negative; check the photocells and refer to **Table 11**
The manoeuvre starts but is immediately followed by an inversion	• The force selected is too low to move the gate. Check for obstructions and if necessary select a higher force as described on page 21
The manoeuvre is carried out but the flashing light is not working	• During the manoeuvre, ensure that there is voltage on the FLASH terminal of the flashing light (as this is intermittent, the voltage value is not significant: approx. 10-30 Vac); if voltage is present, the problem is due to the lamp, which should be replaced with an identical version

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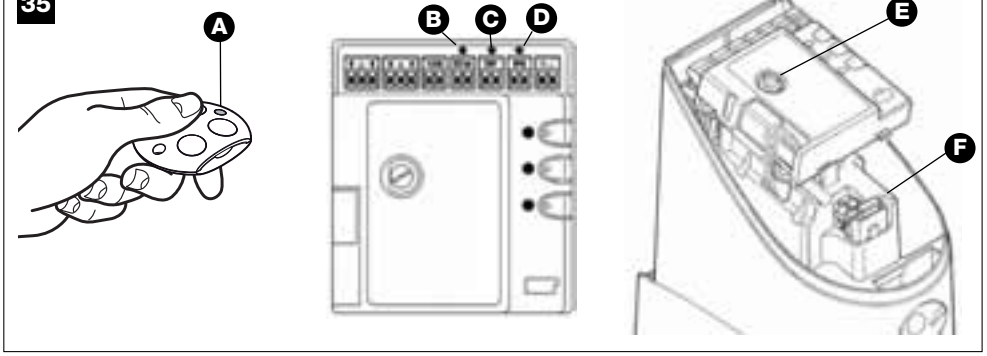

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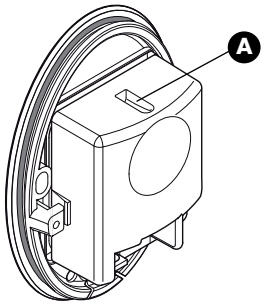

TABLE 11

LED "SAFE"	STATUS	ACTION
Off	The photocell is not powered or it is faulty	Check that the voltage on the photocell terminals is of about 8-12 Vdc; if the voltage is correct then the photocell is probably faulty
3 quick flashes and 1 second pause	Device not recognised by the control unit	Repeat the learning procedure on the control unit. Check that all the photocell pairs on ECSBus have different addresses (see **Table 8**)
1 very slow flash	The RX receives an excellent signal	Normal operation
1 slow flash	The RX receives a good signal	Normal operation
1 quick flash	The RX receives a poor signal	Normal operation but check TX-RX alignment and correct cleaning of photocell lenses
1 very quick flash	The RX receives a bad signal	At the limit of normal operation; check TX-RX alignment and correct cleaning of photocell lenses
Always lit	The RX does not receive any signal	Check for any obstruction between TX and RX. Check that the LED on the TX flashes slowly. Check TX-RX alignment

10.6.2 - Segnalatore lampeggiante

Il segnalatore lampeggiante durante la manovra esegue un lampeggio ogni secondo; quando accadono delle anomalie, vengono emessi dei lampeggi con frequenza maggiore (mezzo secondo); i lampeggi si ripetono due volte, separati da una pausa di un secondo, vedere **Tabella 12**.

TABLE 12

Quick flashes	Status	Action
1 flash 1 second pause 1 flash	ECSbus error	At the beginning of the manoeuvre the devices present do not correspond with those recognised; check and eventually carry out the learning procedure (10.3.3 “Recognition of other devices”). One or more devices may be faulty; check and, if necessary, replace them.
2 flashes 1 second pause 2 flashes	Photocell activated	At the start of the manoeuvre, one or more photocells do not enable movement; check to see if there are any obstructions. During the movement if there is an obstruction no action is required.
3 flashes 1 second pause 3 flashes	“Gearmotor force” limiting device activated	During the movement, the gate experienced excessive friction; identify the cause.
4 flashes 1 second pause 4 flashes	STOP input activated	At the start of the manoeuvre or during the movement, the STOP input was activated; identify the cause.
5 flashes 1 second pause 5 flashes	Error on internal parameters in electronic control unit	Wait at least 30 seconds, and then try giving a command; if the condition persists it means there is a serious fault and the electronic board must be replaced.
6 flashes 1 second pause 6 flashes	Maximum limit of manoeuvres per hour exceeded.	Wait a few minutes until the manoeuvre limiting device falls to below the maximum limit.
7 flashes 1 second pause 7 flashes	Internal electric circuit error	Disconnect all power circuits for a few seconds, and then try giving a command; if the condition persists it means there is a serious fault and the electronic board must be replaced.
8 flashes 1 second pause 8 flashes	A command is already present that disables execution of other commands	Check the type of command that is always present; for example, it could be a command from a timer on the “open” input.
9 flashes 1 second pause 9 flashes	The automation is blocked	Release the automation by giving to the control unit the release automation command.

10.6.3 - Control unit

The LEDs on the control unit provide particular signals to report on the normal operation and on possible faults; see **Table 13**.

TABLE 13 (fig. 37)

LED ECSBus [A]	Status	Action
Off	Fault	Check that the unit is powered; check that the fuses have not been activated; if this is the case check the cause of the fault and replace them with other fuses with the same characteristics.
On	Serious fault	There is a serious fault; switch off the control unit for a few seconds; if the status persists there is a fault and the electronic board must be replaced.
One flash per second	Everything OK	Control unit works correctly
2 long flashes	Input status variation	A variation to the status of the inputs: OPEN, STOP, activation of the photocells, or when the radio transmitter is used, is normal.
1 flash every 5 seconds	Robotics in "standby" mode	Everything OK; when the control unit receives a command normal operation is restored (with a short delay).
Series of flashes separated by a pause	The same signal as for the flashing light, see **Table 12**.	
Quick flash	ECSBus short circuit	An overload has been detected therefore the power to the ECSBus switched off. Check by disconnecting the devices one at a time. To restore power to the ECSBus simply send a command, for example with a radio transmitter.
LED STOP [B]	**Status**	**Action**
Off *	STOP input activated	Check the devices connected to the STOP input
On	Everything OK	STOP input active
LED OPEN [C]	**Status**	**Action**
Off	Everything OK	OPEN input not active
On	OPEN input activated	This is normal only if the device connected to the OPEN input is active.

LED P1 [D]	Status	Action
Off *	Everything OK	No memorisation underway
On	Memorisation mode 1	This is normal during memorisation mode 1 which lasts maximum 10 s.
Series of quick flashes, from 1 to 4	Memorisation mode 2	This is normal during memorisation mode 2 which lasts maximum 10 s.
5 quick flashes	Deletion OK	Deletion of a transmitter successfully completed
1 slow flash	Wrong command	Command received from a transmitter which is not memorised
3 slow flashes	Memorisation OK	Memorisation successfully completed
5 slow flashes	Deletion OK	All radio transmitters successfully deleted
LED P2 [E]	**Status**	**Action**
Off *	Everything OK	"Low" speed selected
On	Everything OK	"High" speed selected
1 flash per second	The learning phase has not been carried out or there are errors in the memory data	Some faulty devices may be present; check and if necessary repeat the device learning phase (see paragraph 10.3.3 "Learning other devices").
2 flashes per second	Device learning procedure underway	It shows that the search for connected devices is underway (it lasts maximum a few seconds).
LED P3 [F]	**Status**	**Action**
Off *	Everything OK	Cycle operation
On	Everything OK	Complete cycle operation
1 slow flash	There is no memorised opening angle	Perform the learning phase (see chapter 3.5.2 - Learning the leaf opening and closing angles)
2 slow flashes	Opening angle learning phase is underway	Opening angle learning phase is underway

* or it could be in "Standby" mode

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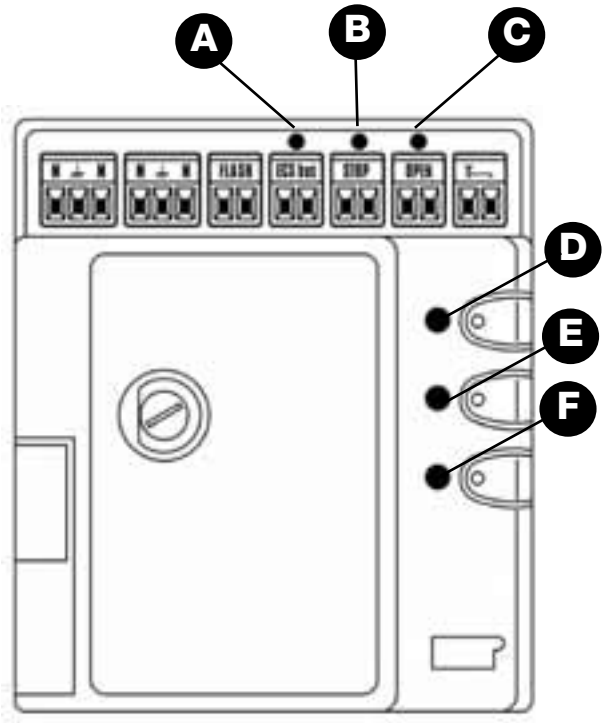

TECHNICAL SPECIFICATIONS OF PRODUCT COMPONENTS

The product WS2S is produced by Nice S.p.a. (TV) I, Mhouse is a company part of the NICE S.p.a. group. In order to improve its products, NICE S.p.a. reserves the right to modify the technical characteristics at any time without prior notice. In any case, the manufacturer guarantees their functionality and fitness for the intended purposes. Note: all technical specifications refer to a temperature of 20°C.

Model/type	WS1SC	WS1SK
Product Type	Electromechanical gearmotor for the automation of automatic gates and doors with built-in control unit complete with radio receiver for “GTX4” transmitters.	
Adopted technology	24 motor, helical gear reducer; mechanical release. A transformer incorporated inside the motor but separated from the control unit, reduces the mains voltage to the nominal 24 V⎓ voltage used in the whole automation system.	
Maximum start-up torque	150 Nm	
Nominal torque	50 Nm	
No-load speed	1.7 RPM	
Speed at nominal torque	1.4 RPM	
Maximum frequency of cycles	30 cycles/hour at 50 °C	
Maximum time continuous cycle	About 10 minutes	
Application limits	The structural design of this product makes it suitable for use on gates with a weight up to 200 kg or leaf width up to 2.2 m. Opening angle 110°	
Mains power supply WS1C- WS1	230 V∼ (+10% -10%) 50/60Hz	24 Vdc
Nominal absorbed power	120 W; on start-up, maximum current is 310 W for a maximum time interval of 2 s	
Rated current absorption	-	1,1A,; on start-up, maximum current is 3.5 A for a maximum time interval of 2 s
Backup power supply	For “PR1” buffer batteries	
Flashing light outpu	For flashing lights with 12 V (maximum 21 W) bulb	
ECSBus output	1 output with maximum load of 15 ECSBus units	
“OPEN” input	For normally open contacts (closure of the contact prompts the “OPEN” command)	
“STOP” input	For normally open and/or 8,2KΩ constant resistance type contacts, or normally closed contacts with self-learning of the "normal" status (a variation with respect to the memorised status generates a “STOP” command)	
Radio Aerial input	50Ω for RG58 or similar type cable	
Max. cable length	Mains power-supply: 30 m; inputs/outputs: 20 m with antenna cable preferably less than 5 m (observe warnings regarding the minimum section and type of cables)	
Ambient operating temperature	-20 ÷ 50°C	
Use in particularly acid, saline or potentially explosive atmospheres	NO	
Assembly	Horizontal on a flat surface with the specific fixing plate	
Protection rating	IP54	
Dimensions / weight	237 x 146 h 290 mm / 6,5 kg	237 x 146 h 290 mm / 6,2 kg
Possibility of remote control	With “GTX4” transmitters, the control unit is set to receive one or more of the following commands: “OPEN”, “Partial Opening”, “Only Open” and “Only Close”	
Compatible GTX4 transmitters	Up to 150 if memorised in mode 1	
GTX4 transmitters range	50-100 m. This distance may vary in the presence of obstacles and electromagnetic disturbance present, and is influenced by the position of the receiving antenna built into the flashing light.	
Programmable functions	“Single cycle” or “Complete cycle” (automatic closure) operating mode Motor speed “low” or “high” Pause time in “complete cycle” selectable from 10, 20, 40, and 80 seconds Type of partial opening selectable from 4 modes Obstacle detection system sensitivity selectable on 4 levels “OPEN command” operating mode selectable on 4 modes	
Self-programmed functions	Self-learning of devices connected to the ECSBus output Self-learning of type of "STOP" device (NO, NC or 8.2 kΩ resistance contact) Self-learning of the opening angle for each motor Self-learning og the automation with 1 or 2 motors	

Photocells PH100	
Product type	Presence detector for automations of automatic gates and doors (type D according to standard EN 12453) comprising a transmitter “TX” and receiver “RX
Adopted technology	Optical, by direct interpolation of TX-RX with modulated infra-red rays
Detection capacity	Opaque objects located on the optical axis between TX and RX, larger than 50 mm and moving slower than 1.6 m/s
TX transmission angle	20° approx.
RX reception angle	20° approx.
Useful range	10 m for maximum TX-RX misalignment ±5° (the device can signal an obstacle even in the event of particularly adverse weather conditions
Power supply / output	The device can only be connected to the “ECSBus” networks from which it receives mains power, and sends the output signals
Absorbed power	1 ECSBus unit
Max. cable length	Up to 20 m (observe warnings regarding the minimum section and type of cables)
Possibility of address assignment	UP to 7 detectors with protection function and 2 with opening command function Automatic synchronisation prevents interference between the various detectors
Ambient operating temperature	-20 ÷ 50°C
Use in particularly acid, saline or potentially explosive atmospheres	No
Assembly	Vertical, wall-mounted
Protection rating	IP44
Dimensions/weight	64 x 89,2 h 29 mm / 60 g

Indicator light FL100	
Product Type	Flashing indicator light for automations of automatic gates and doors. The device incorporates a receiver antenna for remote control
Adopted technology	Indicator light with 12V 21W lamp controlled by the control units for MHOUSE automations
Lamp	12V 21W fitting BA15 (vehicle type lamp)
Power supply	The device can only be connected to the terminals “FLASH” and “AERIAL” of the MHOUSE automation control units
Ambient operating temperature	-20 ÷ 50°C
Use in particularly acid, saline or potentially explosive atmospheres	No
Assembly	Horizontal on a flat surface or vertical wall-mounted
Protection rating	IP55
Dimensions / weight	120 x 60 h 170mm / 285g

GTX4 Transmitters	
Product Type	Radio transmitters for remote control of automations for automatic gates and doors.
Adopted technology	Encoded AM OOK radio modulation
Frequency	433.92 MHz
Encoding	64 Bit rolling code (18 billion billion combinations)
Keys	4, each key can be used for different commands of the same control unit or to control different control units
Radiated power	0.001 W approx.
Power supply	3V; +20% -40%; with 1 lithium battery type CR2032
Battery life	3 years, estimated on the basis of 10 commands/day lasting 1s at 20°C (battery efficiency is reduced at low temperatures)
Ambient operating temperature	-20 ÷ 50°C
Use in particularly acid, saline or potentially explosive atmospheres	No
Protection rating	IP40 (use in the home or protected environments)
Dimensions / weight	50 x 50 h 17mm / 16g

APPENDIX 1

CE Declaration of Conformity

Declaration in accordance with the Directives: 1999/5/CE (R&TTE), 2004/108/CE (EMC); 2006/42/CE (MD) Appendix II, part B
WS1SC, WS1SK, GTX4, PH100 and FL100 are produced by Nice S.p.a. (TV) I; MHOUSE S.r.l. is a commercial trademark owned by the group Nice S.p.a.

Note: *- The contents of this declaration correspond to declarations in the official document deposited at the registered offices of Nice S.p.a. and in particular to the last revision available before printing this manual. The text herein has been re-edited for editorial purposes. A copy of the original declaration for each product can be requested from Nice S.p.a. (TV) I.*

Number: 369/WS2S **Revision:** 0 **Language:** EN

Manufacturer's Name:	NICE S.p.A.
Address:	Via Pezza Alta N°13, Rustignè, 31046 Oderzo (TV) Italy
Person authorised to compile the technical documentation:	Sig. Oscar Marchetto.
Product type:	Electromechanical gearmotor with accessories
Model / Type:	WS1SC, WS1SK, GTX4, PH100, FL100
Accessories:	-

The undersigned, Luigi Paro, in the role of Managing Director, declares under his sole responsibility, that the above mentioned products conform to the requirements of the following directives:

- WS1SC and GTX4 models conform to the Directive 1999/5/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of the 9th March 1999 regarding radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, according to the following harmonised standards:
  - Health protection (art. 3(1)(a)): EN 50371:2002
  - Electric safety (art. 3(1)(a)): EN 60950-1:2006
  - Electromagnetic compatibility (art. 3(1)(b)): EN 301 489-1 V1.8.1:2008, EN 301 489-3 V1.4.1:2002
  - Radio spectrum (art. 3(3)): EN 300 220-2 V2.1.2:2007

In accordance with the directive 1999/5/EC (appendix V), the product GTX4 is class 1 and marked: CE 0682

- Models WS1SC, WS1SK, PH100 and FL100 conform to DIRECTIVE 2004/108/CE/108/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 15th December 2004 regarding the approximation of member state legislation related to electromagnetic compatibility, repealing directive 89/336/EEC, according to the following harmonised standards:
  EN 61000-6-2:2005, EN 61000-6-3:2007

In addition the products WS1SC and WS1SK conform to the following directive according to the requirements for "partly completed machinery":

2006/42/EC Directive OF THE EUROPEAN PARLIAMENT AND COUNCIL of 17 May 2006 regarding machinery, repealing directive 95/16/EC

- We hereby declare that the relevant technical documentation has been compiled in conformity with Annex VII B of directive 2006/42/EC and that the following essential requirements have been satisfied:
  1.1- 1.1.2- 1.1.3- 1.2.1-1.2.6- 1.5.1-1.5.2- 1.5.5- 1.5.6- 1.5.7- 1.5.8- 1.5.10- 1.5.11
- The manufacturer undertakes to transmit, in response to a reasoned request by the national authorities, relevant information on the "partly completed machinery", without prejudice to intellectual property rights of the manufacturer.
- Should the "partly completed machinery" be put into service in a European country with an official language different from the one of this declaration, the importer must attach the translation of this document to the declaration.
- The "partly completed machinery" must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of directive 2006/42/EC.

In addition the products WS1SC and WS1SK conform to the following standards:
EN 60335-1:2002 + A1:2004 + A11:2004 + A12:2006 + A2:2006 + A13:2008
EN 60335-2-103:2003

The products WS1SC and WS1SK conform, within the constraints of applicable parts, to the following standards:
EN 13241-1:2003, EN 12445:2002, EN 12453:2002, EN 12978:2003

Oderzo, 11 november 2010

Ing. Luigi Paro *(Managing Director)*

—— STEP 11 ——

This guide must be stored safely and be accessible to all automation users.

11.1 – *Safety instructions*

• Keep at a safe distance from the moving door until it is completely open or closed; do not go through the door until it is completely open and has come to a standstill.

• Do not allow children to play near the door or with the controls.

• Keep the transmitters away from children.

• Suspend the use of the automation immediately as soon as you notice something abnormal in the operation (noises or jolting movements); failure to follow this warning may cause serious danger and accidents.

• Do not touch moving parts.

• Regular maintenance checks must be carried out by qualified personnel according to the maintenance plan.

• Maintenance or repairs must only be carried out by qualified technical personnel.

11.2 – *Gate Control*

• With radio transmitter

The radio transmitter supplied is ready for use and the four keys have the following functions (**fig. 38**):

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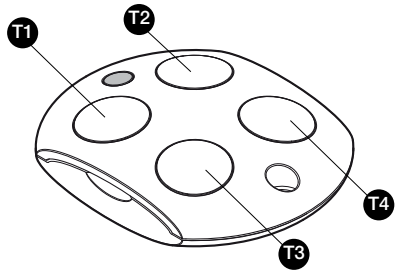

Function (*)	
Key T1	
Key T2	
Key T3	
Key T4	

(*) This table must be compiled by the person who programmed the automation.

• With selector (optional accessory)

The selector has two positions with automatic return to the centre (**fig. 39**).

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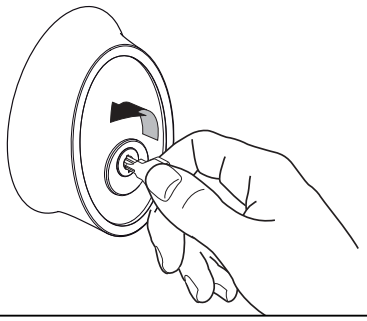

Action	Function
Turned right: "OPEN"	(*)
Turned left: "STOP"	Stops movement of the sectional or up-and-over door

(*) This item must be compiled by the person who programmed the automation.

• Control with safety devices out of service

In the event of safety devices malfunctioning or out of service, the door may still be moved.

01. Activates the gate command (with remote control or key-operated selector switch). The door will open normally if there is the consent of the safety devices, otherwise the command must be activated and held within 3 seconds.

02. After about 2 s the door will move in "hold-to-run" mode, in other words until the command is pressed the door will continue to move; the door will stop as soon as the command is released.

In the event of safety devices out of service arrange for repairs to the automation immediately.

11.3 – *Manually releasing or locking the gearmotor (fig. 40)*

WS1SK-WS1SC are equipped with a mechanical system that enables manual opening and closing of the gate (i.e. as if there is not a gearmotor).

The manual operation must be carried out in case of power failure or system malfunction. In case of power failure the buffer battery can be used (optional accessory PR1).

In case of fault of the gearmotor the motor release can be used to check whether the fault is in the release mechanism.

01. Turn the release cap cover anti-clockwise until it coincides with the hole with the release pin.

02. Insert the key in the release pin.

03. Turn the key anti-clockwise by about 90° until the gate is released.

04. Then move the gate manually.

05. To reset the automation turn the key clockwise and at the same time move the gate until you hear the carriage engage.

06. Remove the key and close the release cap cover by turning it clockwise.

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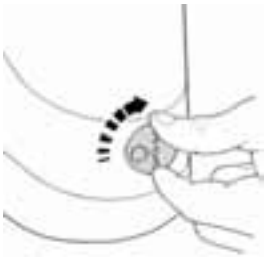

11.4 – *Maintenance operations admissible to the user*

The list of operations to be regularly carried out by the user is listed below.

• For cleaning the surfaces of the devices, use a slightly damp (not wet) cloth. Never use substances containing alcohol, benzene, diluents or other flammable substances. Use of these substances may damage the devices and cause fires or electric shocks.

• Disconnect the automation from the power supply before removing leaves or stones to stop anyone activating the door.

• Regularly check the system, in particular the cables, springs and supports and check for signs of unbalance, wear or damage. Do not use the automation if it needs to be repaired or adjusted as a fault or an incorrectly balanced door may cause injuries.

11.5 – *Remote control battery replacement (fig. 41)*

When the battery charge is low, the transmitter range is reduced significantly. When a key is pressed, if led L1 illuminates and then immediately fades and turns off, this means that the battery is completely discharged and must be replaced immediately.
Otherwise if led L1 illuminates briefly, this means that the battery charge is low; in this case press and hold the key for at least half a second to enable the transmitter to attempt delivery of the command. In any event, if the battery charge is too low to complete a command (and wait for a response) led L1 fades and the transmitter turns off. In these cases, to restore normal operation of the transmitter, replace the old battery with a new version of the same type, taking care to observe the specified polarity.

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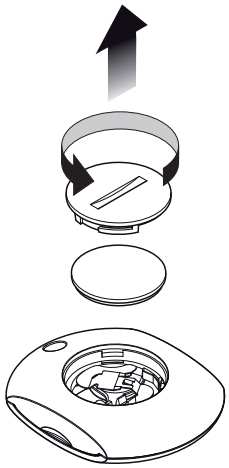

The batteries contain pollutant substances: do not dispose of them with normal waste material; follow the instructions foreseen by local regulations.

11.6 – *Installing the remote control support*

To install the remote control support, see **fig. 42**.

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APPENDIX 2

CE DECLARATION OF CONFORMITY

In conformity with Directive 2006/42/EC, APPENDIX II, part A (EC declaration of conformity for machinery)

The undersigned/company *(name or company name of the person responsible for commissioning of the power-operated gate)*:

. . . . . .

Address: . . . . . .

. . . . . .

Hereby declares under his/her sole responsibility that:

- **the automation**: power-operated swing gate
- **Serial N°**: . . . . . .
- **Year of manufacture**: . . . . . .
- **Location (address)**: . . . . . .

. . . . . .

Complies with the essential requirements of the following directives:

2006/42/EC "Machinery" Directive
2004/108/EEC Electromagnetic compatibility directive
2006/95/EEC "Low Voltage" Directive
1999/5/EC "R&TTE" Directive

and what is provided for by the following harmonised standards:

EN 12445 "Industrial, commercial and garage doors and gates. Safety in use of power operated doors - Test methods"
EN 12453 "Industrial, commercial and garage doors and gates. Safety in use of power operated doors - Requirements"

Name: . . . . . Signature: . . . . . .

Date: . . . . . .

Place: . . . . . .

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